Chapter 15
Recreation

[*Note to reviewers: the data and figures presented in this chapter are currently under revision based on updated project alternatives information and GIS data. Please review this chapter with a focus on the format, structure, and impact conclusions at this time. Subsequent versions of this chapter will provide the updated data and figures.*]

This section describes the physical environment, recreation facilities, and associated recreation activities and opportunities that could be affected by implementing the action alternatives in the Delta Region, including Suisun Marsh and the Yolo Bypass; areas Upstream of the Delta Region; and the State Water Project (SWP) and Central Valley Project (CVP) Export Service Areas (Export Service Areas Region) (Figure 1-10). [*Note to Reviewers: Reference is made to figures of the potentially affected areas presented in Chapter 1, Introduction.*]

15.1 Environmental Setting/Affected Environment

15.1.1 Potential Environmental Effects Area

15.1.1.1 Description of Existing Conditions in the Delta Region

The Delta, Yolo Bypass, and Suisun Marsh contain numerous parks, extensive public lands, and many interconnected rivers, sloughs, and other waterways that offer diverse recreation opportunities. Privately owned commercial marinas and resorts allow access to the waterways and a variety of other recreational opportunities and services. Private lands also provide several recreational opportunities, particularly hunting.

Recreational Activities and Opportunities in the Delta Region

The Delta is a maze of channels and islands at the confluence of the Sacramento and San Joaquin Rivers. It encompasses the largest estuary system on the West Coast. The Delta Region is a 1,150-square-mile area that provides more than 500 miles of navigable waterways, equaling more than 57,000 navigable surface acres (California Department of Boating and Waterways 2003). This vast network of rivers, channels, sloughs, and islands provides a unique and important recreation resource in California.

Based on a statewide survey in which California boaters were asked which waterways they used most out of nearly 300 different waterways, the Delta was identified as one of the most popular boating destinations in the state, exceeded in popularity only by the Pacific Ocean, San Francisco Bay, and the Colorado River. In addition, among the 10 regions the state delineated for the survey, the 3 regions that include portions of the Delta (San Francisco Bay, Sacramento River Basin, and Central Valley) accounted for nearly half of the registered boats in the state (California Department of Boating and Waterways 2002).

Recreation users in the Delta often participate in multiple activities; although boating and fishing are the most popular, participants in these activities also take part in wildlife viewing, sightseeing,

walking, picnicking, and camping (California Department of Parks and Recreation 1997), contributing to overlap in activity participation by visitors. There is also overlap because many activities, such as hunting, fishing, wildlife viewing, and sightseeing, can be both water- and land-based. This overlap creates an interconnected web of users and activities and leads to an appreciation and enjoyment of the Delta for the variety of recreation opportunities available on each trip.

This section provides a description of the recreational activities and facilities in the statutory Delta, as well as a discussion of Delta recreation users and estimates of participation in Delta recreation activities.

Water-Based Recreation Activities

The Delta is a major destination for water-based recreationists because of its climatic conditions; variety and abundance of fish; large maze of navigable waterways; and favorable water levels during summer, when most regional reservoirs experience substantial drawdown. Popular activities in the Delta include cruising, waterskiing, wakeboarding, using personal watercraft, sailing, windsurfing, and kiteboarding, as well as fishing and hunting (from land and by boat).

Boating

Most recreational boating use is by small (under 26 feet long) powerboats (California Department of Parks and Recreation 1997; California Department of Boating and Waterways 2003), although larger cruising boats and houseboats are important components of boating use in the Delta. Common powerboating activities in the Delta are cruising (exploring the maze of Delta channels), waterskiing, wakeboarding, and using personal watercraft. Opportunities for these activities can be found throughout the Delta, with ideal locations depending on wind, water temperature, channel width, orientation, depth, and proximity to facilities. The Delta provides many facilities for boaters including ramps, yacht clubs, and marinas, which often have amenities such as fuel supplies, waste pump-out facilities, and guest docks. Many restaurants and other businesses in the Delta, as well as the towns of Walnut Grove and Isleton, also offer guest docks for temporary boat tie-up.

The summer months (Memorial Day to Labor Day) are the peak times for powerboating activities in the Delta, with the Fourth of July typically the single peak-use event of the year, followed by other summer weekends and special event days (California Department of Boating and Waterways 2003).

Nonpowered boating activities in the Delta include sailing, windsurfing, kiteboarding, canoeing, and kayaking. All three wind-related activities (sailing, windsurfing, and kiteboarding) are conducted on the main Sacramento and San Joaquin Rivers, with windsurfing and kiteboarding most common on the Sacramento River from Rio Vista to Sherman Island, and on the San Joaquin River from Twitchell Island to Little Sherman Island (California Department of Boating and Waterways 2003). Sailing activities are conducted more widely on the main rivers. Additionally, many sailboats in the Delta are motorized and can use other waterways with sufficient depth. Canoeing and kayaking are popular in the eastern Delta where participants can find tranquil, isolated waterways that provide shelter from strong winds and abundant wildlife-viewing opportunities.

Optimum wind conditions occur during the summer for sailing, windsurfing, and kiteboarding, making summer weekends and holidays the peak use times. Paddle boaters prefer spring and fall because of the lower air temperatures, fewer conflicts with other boaters, and more wildlife-viewing opportunities (California Department of Boating and Waterways 2003).

Boat Fishing

Boat fishing is a popular activity in the Delta. Game fish found in the Delta include catfish, sturgeon, steelhead, striped bass, largemouth (black) bass, American shad, Chinook salmon, crappie, and bluegill (California Department of Parks and Recreation 1997). Boat fishing is a year-round activity in the Delta, with peak-use seasons varying by species, species abundance, and angling regulations. Striped bass are prevalent in spring, sturgeon between winter and spring, salmon in late summer through fall, and black bass between fall and spring (California Department of Boating and Waterways 2003; SacDelta.com 2009a). The Delta is one of the most productive trophy bass fisheries in the nation, and numerous bass tournaments are held in the Delta throughout the year, including several corporate-sponsored tournaments (California Department of Fish and Game 2007). Fishing is an important economic driver in the Delta and supports commercial guiding and charter boat opportunities.

Boat Hunting

Hunting has long been a recreational activity in the Delta, with waterfowl hunting being the primary type. Hunting by boat (typically used as a floating blind) is popular at the larger flooded islands, such as Franks Tract and Sherman Island, because hunters seek open, shallow waters and marsh areas where waterfowl congregate (California Department of Boating and Waterways 2003). Licenses and duck stamps to hunt waterfowl are required by the California Department of Fish and Game (DFG) and U.S. Fish and Wildlife Service (USFWS). DFG manages hunting in California, including the public hunting programs at Sherman Island and other smaller wildlife areas. The California Department of Parks and Recreation (DPR) allows hunting at Franks Tract, designated as Franks Tract State Recreation Area. Boat hunting is also allowed at Big Break, which is managed by the East Bay Regional Park District (EBRPD) (Delta Protection Commission 1997). Late fall is the designated waterfowl hunting season, with starting and ending dates varying each year by species and by hunting method.

Other Boating-Related Activities

Boaters also participate in other related activities, such as boat camping (typically in houseboats or other large boats with sleeping accommodations), swimming, wildlife viewing, and sightseeing as secondary activities.

Commercial Boat Tours and Fishing Guides

Numerous commercial tours and guides operate throughout the Delta and provide fishing and sightseeing opportunities. Several operations offer guided fishing and charter opportunities throughout the Delta. Boat tours include cruises, private charters, and ecotours through eight different outfitters, several of which operate year-round (California Delta 2009a).

Land-Based Recreation Activities

Land-based activities are also popular in the Delta and include hunting, shoreline fishing, wildlife viewing, camping, picnicking, hiking and walking on trails, sightseeing, and visiting historic sites.

Hunting

Many private duck clubs, primarily in Yolo County, along with several state wildlife areas and one federal wildlife refuge, provide hunting opportunities in the Delta. Generally, hunting on land is for

waterfowl and pheasant; hunting for rabbit, dove, and quail is also allowed at several of the state wildlife areas. A tule elk hunt is conducted at Grizzly Island Wildlife Area in Suisun Marsh. Hunting blinds are provided at Yolo Bypass Wildlife Area and Stone Lakes National Wildlife Refuge (NWR).

The designated hunting season for waterfowl is generally October through December; for pheasant, the season is generally November through December, with starting and ending days varying each year by species and by hunting method (California Department of Fish and Game 2009a; California Fish and Game Commission 2009; California Department of Fish and Game 2009b). Licenses and duck or upland game stamps are required. DFG administers the Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on State-owned lands on Twitchell and Sherman Islands. Hunting days, which typically are Wednesdays and Saturdays, totaled 13 days in 2008, including two junior hunt days and one women's hunt day (California Department of Fish and Game 2009c).

Shoreline Fishing

Several public fishing piers and public parks in the Delta provide shoreline, or bank, fishing access. Some marinas also provide fishing piers. Shoreline anglers may gain access to Delta waterways at numerous locations along Delta roads (California Department of Boating and Waterways 2003). Striped bass is the most popular game species among shoreline anglers (California Department of Parks and Recreation 1997). Bank fishing is a year-round activity, with peak seasons varying by fish species. Other species, like crawfish and frogs, can also be taken by hand, line, or trap with a valid fishing license.

Wildlife Viewing/Botanical Viewing/Nature Photography

Opportunities for birding and other wildlife viewing, as well as nature photography, are widespread throughout the Delta; however, only a few locations provide facilities for wildlife viewing. Generally, most wildlife viewing is informal or is secondary during another activity (e.g., fishing, boating). The Delta is a critical stopover for migratory birds, which can be viewed and photographed at the Yolo Bypass Wildlife Area, Stone Lakes NWR, Cosumnes River Preserve, and Woodbridge Ecological Reserve, among other locations. Wildlife viewing and nature photography opportunities are available year-round in the Delta, although opportunities to see and photograph particular migratory bird species vary and generally occur in fall and spring. The arrival of overwintering sandhill cranes in the Delta each fall provides viewing opportunities on public and private lands, and special events and tours are held each year while the birds are present. Botanical viewing opportunities are available in spring at the Jepson Prairie Reserve, where several hundred plant species have been identified. Delta Meadows (DPR property) is among the last remaining remnants of natural Delta uplands and is accessible on foot or by boat (California Department of Parks and Recreation 2009a).

Camping

Several locations in the Delta provide camping opportunities, including both tent and recreational vehicle (RV) camping sites. Generally, most camping opportunities are at large public parks and private resorts and marinas. Some private resorts and marinas provide opportunities for tenants and guests only, not the general public. Camping opportunities for the general public, such as tent, RV, and group camping, are available at only a few public parks. One park, Brannan Island State Recreation Area, provides boat-in camping, where a boat berth is accompanied by a land campsite.

Camping is associated with general public recreational use of the Delta, particularly boating and fishing, and therefore peaks during summer.

Picnicking

The generally fair weather, potential for viewing wildlife, and scenic vistas make the Delta a popular setting for picnicking. Many public day-use areas and marinas provide picnic sites throughout the Delta. Some areas also offer group picnicking opportunities. Picnicking use is often combined with boating, fishing, swimming, and wildlife viewing because of the location of many picnic sites in the Delta along the water's edge. Picnicking, as well as boating and fishing, is tied to general public use of the Delta and is higher in summer.

Hiking/Walking/Biking

Hiking, walking, and biking trail opportunities are fairly limited in the Delta, with only a few widely scattered trails available for hiking/walking, and only a few trails available along the shoreline in the Pittsburg, Antioch, and Oakley areas for hiking/walking and biking. The 6.5-mile Marsh Creek Trail is accessible from the Big Break Regional Shoreline in Oakley. Several Delta parks have short, paved walkways or footpaths; however, these are not considered "trails" for the purpose of this discussion. The Delta Protection Commission (DPC) is leading the planning process for the Great California Delta Trail System. The system will link the San Francisco Bay Trail and trails planned along the Sacramento River in Yolo and Sacramento Counties to present future trails in and around the Delta and along shorelines in several counties (Delta Protection Commission 2009). This includes the Mokelumne Coast to Crest Trail, which is anticipated to pass through the Delta (Mokelumne Coast to Crest Trail 2009). Trail use in the Delta occurs year-round.

Sightseeing

Few facilities are provided in the Delta for sightseeing (e.g., signage, markers), so this activity typically is informal and self-led. Six recommended driving tours found on the California Delta Chambers and Visitor's Bureau website (California Delta 2009b) generally lead visitors past historic sites, sloughs, rivers, marinas, resorts, ferries, and bridges in all major areas of the Delta. These driving tours combine travel and sightseeing on the main highways in the Delta (State Routes [SRs] 160, 12, and 4) with viewing sites on smaller roads along sloughs or across islands. The Sacramento County and Contra Costa County portions of SR 160 (the River Road) are designated as State Scenic Highways (California Department of Transportation 2007; California Department of Transportation 2008; Cadd pers. comm.). The SR 4 Bypass from SR 160 near Antioch to SR 84 near Brentwood (about 9.5 miles) is eligible for designation as a State Scenic Highway (California Department of Transportation 2009). A 28-mile portion of SR 160 in Sacramento County is also designated as a County Scenic Highway (County of Sacramento 2009a). Scenic highway designations are discussed further in Chapter 17, *VisualResources*.

Visiting Historic Sites

The Delta has a long and varied history of human use and, therefore, has many historic sites, several of which are associated with legacy towns, such as Isleton, Locke, and Walnut Grove. (The term "legacy town" is applied generally to several small, historic towns along the Sacramento River in the Delta that were originally established as riverboat ports.) Self-guided walks, available in both Locke and Walnut Grove, take visitors past old sites and buildings, including residences, a market, gambling museum, blacksmith shop, butcher shop, and bank. Visitors can stop at historic sites in the

Delta year-round. DPR and the Sacramento Housing and Redevelopment Agency have restored a former Chinese immigrant boarding house in Locke to preserve its history (Reyman Construction 2009). The project also includes a visitor's center and interpretative exhibits within the boarding house (California Department of Parks and Recreation 2007a).

Water- and Land-Based Activity Participation

In 1996, DPR surveyed boat owners and licensed anglers who used the Delta that year (California Department of Parks and Recreation 1997). Among boaters, cruising and fishing from a boat were the most popular activities, with about 75% of respondents participating in each activity. The most popular nonboating activities among boaters were sightseeing, wildlife viewing, and shore-based fishing. (The first two of those activities can be pursued from a boat or land but were categorized as "nonboating" activities.) The survey of anglers indicated that nearly 90% fished from a boat, about 75% fished from shore, and about 14% fished in tournaments. The most popular nonfishing activities among anglers were sightseeing, pleasure boating, and wildlife viewing.

Surveys of the small and large boat owners conducted in 2000–2001 for the Delta Boating Needs Assessment (California Department of Boating and Waterways 2003) indicated, like the earlier DPR surveys, that cruising, fishing, and sightseeing were among the most popular Delta recreation activities. Large-boat owners placed less emphasis on camping and picnicking and more emphasis on cruising and sightseeing than small-boat owners (although a majority of both groups participated in those activities). Table 15-1 compares the Delta participation rates among small- and large-boat owners in these and other water- and land-based recreation activities.

Table 15-1. Boat Owners' Participation in Recreation Activities in the Delta

Activity	Small-Boat Owners[a] (%)	Large-Boat Owners[b] (%)
Cruising	51	82
Fishing	67	57
Sightseeing	55	65
Camping	31	13
Picnicking	39	25
Swimming	47	68
Skiing/Wakeboarding	40	17
Wildlife Viewing	34	45

Source: California Department of Boating and Waterways 2003.

[a] Small boats were defined as boats less than 26 feet long; data represent the level of participation during small-boat owners' Delta boating trips (all past trips).

[b] Large boats were defined as boats 26 feet long or larger; data represent the level of participation during large-boat owners' most recent Delta boating trip.

Recreational Facilities in the Delta

Numerous recreational facilities throughout the Delta support participation in the wide variety of activities available. The following sections describe public recreation areas/facilities and privately owned recreational facilities for each Delta county. A summary of the public and private recreational facilities in each county is presented in Table 15-2. Additional details on the privately owned

facilities, including name, type of facility, and amenities provided, are presented in Appendix 15A, *Boat Traffic Study Memorandum*.

Table 15-2. Summary of Public and Private Delta Recreational Facilities by County

Recreation Facility	Alameda	Contra Costa	Sacramento	San Joaquin	Solano	Yolo
Marinas[a]	1	47	31	31	3	5
Fishing Access	0	9	7	6	0	2
Hunting Areas	0	7	3	4	3	18
Public Boat Ramps[b]	0	3	5	5	0	1
Trail Access	0	2	3	2	0	1
Camping Areas[b]	0	0	5	2	0	0
Windsurf Access	0	0	5	0	0	0

Sources: Delta Protection Commission 1997, 2006.

[a] For the purposes of this summary, yacht clubs and sailing clubs are included in the marina totals.

[b] Some marinas also have a public-use ramp and/or recreational vehicle or tent camping areas available for a fee; those facilities are not included in the tallies of public boat ramps or stand-alone camping areas.

Alameda County

Only the northeastern corner of Alameda County extends into the Delta, south of Clifton Court Forebay. Delta waterways in the county include a short segment of Old River and an adjacent dead-end slough, where a single private marina is located.

Public Facilities/Areas

There are no public facilities/areas in the Alameda County portion of the Delta.

Private Facilities

One private marina in the Alameda County portion of the Delta provides dry storage facilities and a boat launch ramp (Figure 15-1 and Appendix 15A, Table 15A-1).

Contra Costa County

Contra Costa County includes the southwestern Delta, bounded by the San Joaquin River on the north and Old River on the east. Major cities include Pittsburg and Antioch on the San Joaquin River and the communities of Oakley, Brentwood, and Discovery Bay south of the San Joaquin River. The Contra Costa County portion of the Delta contains numerous public and private recreational facilities, including more than 40 marinas and yacht clubs, the largest of which provides several hundred berths. More than 20 private marinas and yacht clubs are on Bethel Island, making that area a focus for Delta boating activity. Figure 15-1 illustrates the locations of these recreational facilities.

Public Facilities/Areas

Antioch Dunes National Wildlife Refuge

Established in 1980, the Antioch Dunes NWR was the first refuge in the country to be established to protect endangered plants and insects. The refuge was closed to the public in 1986 to protect the refuge's endangered species and their habitats. The refuge is fenced, and public use is limited to monthly docent-led tours and educational tours given to groups upon request (U.S. Fish and Wildlife Service 2001; U.S. Fish and Wildlife Service 2009).

Antioch Marina and Barbara Price Marina Park

The City of Antioch owns and manages a large marina on the San Joaquin River, approximately 3.25 miles west of the SR 160 Antioch Bridge. The 12.8-acre marina provides opportunities for boating and fishing, consisting of fishing piers, an observation pier, 310 berths, pump-out facilities, a fuel dock, a restaurant, a guest dock, and overnight berthing. The berthing facilities accommodate both powerboats and sailboats (City of Antioch 2009a). Adjacent to the marina is the Barbara Price Marina Park, a city neighborhood park. The 7-acre park has picnic sites, a group picnic area, an exercise course, a tot lot, and shoreline fishing access (City of Antioch 2009b).

Antioch Municipal Boat Ramp

The City of Antioch provides a public boat launching facility east of Rodgers Point. The site includes a boat ramp, fishing pier, and parking area (City of Antioch 2003).

Antioch/Oakley Regional Shoreline

EBRPD's Antioch/Oakley Regional Shoreline Park is near the SR 160 bridge in Antioch. A 550-foot fishing pier, constructed from the old SR 160 bridge piers, enhances shoreline fishing opportunities on the San Joaquin River. A fish cleaning station and 10 picnic sites are also provided in the park (East Bay Regional Park District 2009a; East Bay Regional Park District 2004).

Big Break Regional Shoreline

EBRPD owns and manages Big Break Regional Shoreline—1,648 acres along the San Joaquin River in the City of Oakley (California State Coastal Conservancy 2007). Since adopting the Big Break Regional Shoreline Land Use Plan in 2001, EBRPD has been developing portions of the site in phases, with construction of a parking lot, an access road, restrooms, and a fishing and observation pier already completed. EBRPD has designated two Recreation Units on the site (totaling 12 acres of long-abandoned asparagus fields) for interpretive exhibits, trails, an observation platform, a picnic area, a pier, and a small boat launch ramp. The Delta Science Center, also located at the Big Break Regional Shoreline, provides opportunities for environmental education and research (Delta Science Center 2009a). The center is a collaboration among the cities of Oakley, Brentwood, Antioch, and Pittsburg; EBRPD; Pacific Gas and Electric Company; and the Sierra Club, among others (Delta Science Center 2009b).

Big Break Regional Trail

EBRPD is developing the Big Break Regional Trail. More than 1 mile of the trail has been completed and connects the Marsh Creek Trail in the east to a residential neighborhood in Oakley. The open portion of the trail runs just south of Big Break Regional Shoreline and has a rest stop. The proposed

trail extension continues to the west for approximately 1 mile, beyond Big Break Regional Shoreline and within 0.5 mile of the Delta Science Center at Big Break (East Bay Regional Park District 2009b).

Browns Island Regional Preserve

Browns Island lies at the confluence of the Sacramento and San Joaquin Rivers, north of the city of Pittsburg. The 595-acre island is owned and managed by EBRPD. There are no recreational facilities on the island, and access is arranged by appointment only (East Bay Regional Park District 2009c).

Clifton Court Forebay

Clifton Court Forebay is located at the SWP Harvey O. Banks Pumping Plant and is managed by the California Department of Water Resources (DWR). Boating, camping, and swimming are not allowed at the forebay. However, bank fishing is popular at the southern end where vehicles access is permitted. Hunting is allowed on Wednesdays, Saturdays, and Sundays during designated seasons for waterfowl (California Department of Fish and Game 2008a). There are no recreational facilities at the forebay.

Franks Tract State Recreation Area

Franks Tract State Recreation Area, just north of Bethel Island, occupies two flooded islands, Franks Tract and Little Franks Tract. No recreational facilities are in the State Recreation Area, and both flooded islands are accessible only by boat. Recreation opportunities in the State Recreation Area include fishing, boating, and waterfowl hunting (on part of the open water) (California Department of Parks and Recreation 2009b).

Jersey Island

Fishing, hiking, and pheasant hunting are allowed by the Ironhouse Sanitary District (ISD) on its Jersey Island property, although users must obtain a Jersey Island Public Use Pass (and parking pass if needed) from ISD. Fishing is available year-round, and hiking is available year-round except during pheasant hunting season. A short trail, the Halsey Trail, is on the north side of the island from the ferry landing west along the San Joaquin River (Ironhouse Sanitary District 2009).

Marsh Creek Regional Trail

EBRPD's Marsh Creek Regional Trail runs along Marsh Creek in eastern Contra Costa County, from the Delta shores of Big Break south to Creekside Park in Brentwood. The paved, multiuse trail is 6.5 miles long. Plans exist to extend the trail to 14 miles, connecting the Delta to Morgan Territory Regional Preserve and Round Valley Regional Park east of Mount Diablo State Park (East Bay Regional Park District 2009b).

Rhode Island Wildlife Area

The Rhode Island Wildlife Area consists of a 67-acre island located in Old River between Holland Tract and Bacon Island. It provides habitat for rivers otters, beavers, muskrats, and birds such as ducks, herons, and egrets, among others. The wildlife area is accessible only by boat and provides opportunities for fishing, wildlife viewing, and waterfowl hunting (California Department of Fish and Game 2009d; California Department of Fish and Game 2008a). Though the public can access this area, no facilities are provided.

Riverview Park

The City of Pittsburg provides waterfront access to the Sacramento River at the 4-acre Riverview Park (City of Pittsburg 2004). The park provides opportunities for picnicking and shoreline fishing and has footpaths and several picnic sites.

Private Facilities

There are 41 marinas, four yacht clubs, one duck club, one hunting club, and one fishing access site in Contra Costa County. All the marinas have boat berths for long-term storage. There are 19 small marinas (fewer than 50 berths), 15 medium marinas (50 to 200 berths), and 7 large marinas (more than 200 berths). About one-third (15) of the marinas provide a launch ramp, and 12 marinas provide campsites. Six marinas also offer waste pump-out facilities and four provide picnicking areas. One marina also provides fishing access, and one offers houseboat rentals. One of the yacht clubs provides boat berthing and gas facilities; however, the other three yacht clubs, the duck club, and the hunting club do not provide any facilities. The fishing access site provides only a fishing pier.

Sacramento County

A narrow strip of Sacramento County, between the Sacramento River and Steamboat Slough on the west and between the San Joaquin and Mokelumne Rivers on the east, extends across the northern, central, and western portions of the Delta. This area includes a string of small historic towns on the Sacramento River: Courtland, Hood, Isleton, Locke, Ryde, and Walnut Grove. Numerous private and public recreational facilities are located in this portion of the Delta. These include more than 30 marinas and yacht clubs, about half of which are concentrated on Andrus Island in an area commonly referred to as the "Delta Loop," and which together account for more than 1,800 boat berths. The county is also home to one of the largest public parks in the Delta, Brannan Island State Recreation Area. For locations of the recreational facilities described for Sacramento County, see Figure 15-2.

Public Facilities/Areas

Brannan Island State Recreation Area

Brannan Island State Recreation Area, just south of the City of Rio Vista, is on the northern side of Threemile Slough and occupies the area between the slough and the Sacramento River from the SR 160 bridge to Sevenmile Slough. The State Recreation Area is a heavily used site, particularly from May to October (California Department of Parks and Recreation 2009c). Activities available in the State Recreation Area include camping, picnicking, boating, fishing, and swimming. State Recreation Area facilities include a six-lane boat ramp, visitor center, group picnic area, day-use area, swim beach, fishing pier, 102 family campsites, 13 RV sites with boat berths, several walk-in campsites, six group campsites, and an RV rally area. In addition, the State Recreation Area conducts 3-hour canoe tours of nearby Delta waterways in the spring and fall (California Department of Parks and Recreation 2009d; California Department of Parks and Recreation 2009e). Across from the main area of the State Recreation Area, on the western side of SR 160, are additional State Recreation Area day-use facilities and windsurfing access at Windy Cove. (California Department of Parks and Recreation 2008a).

Cliffhouse and Georgiana Slough Fishing Access

These small shoreline fishing access sites are provided by Sacramento County. Cliffhouse Fishing Access offers parking, picnic sites, and shoreline access to the Sacramento River. This site is popular for fishing and clamming and is also used for windsurfing access (SacramentoRiver.org 2009a). Georgiana Slough Fishing Access provides picnic sites and shoreline access to Georgiana Slough and is also used for hand launching small boats (SacramentoRiver.org 2009b).

Cosumnes River Preserve

The 45,859-acre Cosumnes River Preserve consists of lands owned by the U.S. Bureau of Land Management (BLM), DFG, DWR, Ducks Unlimited, Sacramento County, State Lands Commission, and The Nature Conservancy (the largest landholder), as well as lands held in conservation easement (Cosumnes River Preserve 2008). The preserve was created to restore and protect the Cosumnes River and the surrounding landscapes including the valley oak riparian forest and freshwater seasonal wetland habitat communities (Cosumnes River Preserve 2009a; Cosumnes River Preserve 2009b).

The preserve provides walking/hiking, fishing, hunting, nonmotorized boating (e.g., canoeing and kayaking), wildlife viewing, and sightseeing recreation opportunities. Most of these activities are focused at the visitor center, which houses interpretive displays, interactive educational exhibits, and a picnic area. The visitor center provides information on the preserve's driving tour, which highlights areas not open to the public (Cosumnes River Preserve 2009c). From the center, visitors can access the 3-mile Cosumnes River Walk Trail, located on levees that pass through several habitats, and the 1-mile Lost Slough Wetlands Walk Trail, which tours through marshes and wetlands (Cosumnes River Preserve 2009d; Cosumnes River Preserve 2009e). Generally, there is no public fishing access at the preserve, although boat fishing is allowed in the Cosumnes River main channel and sloughs accessible from the Mokelumne River. Limited waterfowl hunts for youth and mobility-impaired hunters have been allowed in the Cougar Wetland; however, hunting in the rest of the preserve is only allowed by boat on the river and sloughs (Cosumnes River Preserve 2009f). The preserve has a boat launch south of the visitor parking lot for non-gas-powered boats only.

Delta Meadows

Delta Meadows is near the town of Locke, along Railroad Slough. Delta Meadows was acquired to protect one of the last remnants of natural conditions in the Delta before Euro-American settlement. It is primarily undeveloped, although a road passes through the parcel along Railroad Slough. A 1-mile footpath parallel to the road provides walking/hiking opportunities. Canoe tours take place twice daily on Saturdays and Sundays during spring and fall. Boating and fishing opportunities are also available (California Department of Parks and Recreation 2009a; California Department of Parks and Recreation 2009f).

Garcia Bend Park

The City of Sacramento manages the 24-acre Garcia Bend Park on the Sacramento River. Facilities include a boat ramp with trailer parking and a courtesy dock, three soccer fields, two tennis courts, three picnic sites, a tot lot, and four senior and disabled fitness equipment stations (City of Sacramento 2009a; City of Sacramento 2009b).

Hogback Island Access

Hogback Island Access is a Sacramento County park that provides boating, fishing, and picnicking opportunities along Steamboat Slough near the small town of Ryde. Facilities include a picnic area and lagoon with a dock and boat launch (Sacramento County Regional Parks 2009).

Isleton and Walnut Grove Public Docks

The towns of Isleton and Walnut Grove both provide public docks along the Sacramento River for boaters to temporarily tie up while visiting the towns.

Lower Sherman Island Wildlife Area

A 3,115-acre marshland in the Lower Sherman Island Wildlife Area lies at the confluence of the Sacramento and San Joaquin Rivers, accessible only by boat (California Department of Fish and Game 2009e). The primary recreational activities at the wildlife area are fishing and hunting, although other recreation activities include wildlife viewing, photography, and powered and nonpowered boating. Waterfowl hunting is the primary hunting activity in the wildlife area; hunting for coot, moorhen, pheasant, dove, and rabbit also is permitted (California Department of Fish and Game 2008a). Fishing occurs year-round in the wildlife area; the site is known for striped bass, largemouth bass, and catfish (California Department of Fish and Game 2007). There are no recreational facilities.

Sherman Island Public Access Facility

The Sherman Island Public Access Facility on the Sacramento River is managed by Sacramento County and provides opportunities for fishing, picnicking, windsurfing, kiteboarding, boating, and camping. A few picnic facilities, a boat launch, and launch sites for windsurfing, kiteboarding, or other small craft are available to the public (SacramentoRiver.org 2009c; California Department of Fish and Game 2007). The site is popular for fishing, and both shoreline and boat fishing opportunities are available. RV and tent camping are also allowed (California Department of Fish and Game 2007).

Stone Lakes National Wildlife Refuge

The Stone Lakes NWR receives more than 6,000 visitors annually to participate in waterfowl hunting, wildlife observation, photography, and environmental and interpretive education. A public waterfowl hunting program consists of land- and water-accessible blinds with an emphasis on opportunities for youth and wheelchair-dependent visitors. Two units in the refuge are open two Saturdays a month for public use, during which visitors can take a 3-mile round trip self-guided walk through grasslands, wetlands, and riparian habitat to an observation platform overlooking Lower Beach Lake and managed wetlands. The refuge also hosts the annual *Walk on the Wildside* outdoor festival event, several school field trips, and docent-led hikes. There is no public fishing program at the refuge (U.S. Fish and Wildlife Service 2007a; U.S. Fish and Wildlife Service 2007b).

Private Facilities

Private facilities in Sacramento County include 31 marinas, 3 camping areas, and 1 boat ramp. All of the marinas have boat berths for long-term storage. The marinas include 12 small marinas (fewer than 50 berths), 14 are medium size (50 to 200 berths), and 5 are large (more than 200 berths). Sixteen of the marinas provide campsites, and many provide picnicking opportunities (13), a launch

ramp (12), and waste pump-out facilities (10). A few of the marinas provide fishing access (4) or a fishing pier (3). One marina also provides cabins. The camping facilities collectively offer fishing access, guest docks, a ramp, a pump-out facility, a beach, and picnicking opportunities. The private boat ramp also provides an area for dry storage. Appendix15A, Table 15A-1 summarizes the recreational facilities for both public and private use in Sacramento County.

San Joaquin County

San Joaquin County encompasses a large area of the eastern and southern Delta, east of the Mokelumne and Old Rivers. The county includes the cities of Lathrop, Stockton, and Tracy at the margins of the Delta and the San Joaquin River as it crosses this part of the Delta. Although recreational facilities are scattered on various waterways throughout the county, including more than 30 marinas and yacht clubs, most of the facilities are in or near Stockton. The largest marinas contain more than 700 berths. There are also several private clubs located on channel islands in the vicinity of Stockton, and several public launch ramps in Stockton and on the San Joaquin River to the south. Figure 15-3 presents the locations of these facilities.

Public Facilities/Areas

Buckley Cove Park and Louis Park

The City of Stockton manages Buckley Cove and Louis Parks, 53 and 74 acres, respectively. Both parks have boat launches; Buckley Cove Park provides boat access to the San Joaquin River Deep Water Ship Channel, and Louis Park provides boat access to the Smith Canal. Buckley Cove Park also has a few picnic sites and a tot lot. Louis Park has footpaths; picnic sites, including two group picnic areas; and facilities for tennis, softball, baseball, and handball (City of Stockton 2009a; City of Stockton 2009b).

Calaveras River Bike Path

The 7.43-mile Calaveras River Bike Path runs from Buckley Cove to Cherokee Road in the City of Stockton (City of Stockton 2009c).

Dos Reis Regional Park

Dos Reis Regional Park is located on the San Joaquin River and is managed by the County. Camping, boating, fishing, and day-use opportunities are available, with facilities that include 26 RV campsites with hookups, showers, a boat ramp, a picnic area, and a children's play area. Tent camping is also available (San Joaquin County 2009a).

Grupe Park and Legion (American) Park

Grupe Park, on Fourteenmile Slough, and Legion Park, on Smith Canal, are both City of Stockton local parks, each roughly 20 acres. Both parks provide several picnic sites, a tot lot, fishing opportunities, and at least one multiuse sports facility. Grupe Park also provides a group picnic area and facilities for tennis, softball, baseball, and handball (City of Stockton 2009a).

McLeod Park, Weber Point Park, and North and South Seawalls

The contiguous McLeod Park, Weber Point Park, and the North and South Seawalls cover a total of about 16 acres at the terminus of the Stockton Channel and are managed by the City of Stockton. The parks have been featured in the ongoing renovation of the downtown Stockton waterfront and

provide paved promenades along the water. Weber Point Park is the centerpiece and provides an outdoor event center where concerts and festivals are held (City of Stockton 2009a; City of Stockton 2010a; City of Stockton 2010b).

Morelli Park

The City of Stockton's Morelli Park, on the Stockton Channel, includes a four-lane boat launch and other new amenities. Dry stack boat storage is planned (City of Stockton 2009d).

Mossdale Crossing Regional Park

San Joaquin County manages Mossdale Crossing Regional Park on the San Joaquin River south of Lathrop. The park provides a boat ramp, fishing opportunities, five picnic sites, and one playground (San Joaquin County 2009b).

Westgate Landing Regional Park

San Joaquin County manages the 15-acre Westgate Landing Regional Park on the Mokelumne River. The park provides camping, fishing, picnicking, and boating opportunities. It has 14 campsites (RV and tent, but no hookups), 1 fishing pier, 9 picnic sites, and 24 boat slips available for overnight docking (San Joaquin County 2009c).

White Slough Wildlife Area

White Slough Wildlife Area consists of 880 acres of designed ditches, canals, marshes, grasslands, riparian habitat, and nine ponds that were created during the construction of Interstate 5 (I-5). The wildlife area, west of Lodi and north of Stockton, provides opportunities for fishing, hiking, and wildlife viewing. Hunting opportunities are also available from September 1 through January 31, specifically for pheasant, quail, dove, and waterfowl (California Department of Fish and Game 2009f; California Department of Fish and Game 2008a).

Woodbridge Ecological Reserve

Woodbridge Ecological Reserve, also known as the Isenberg Sandhill Crane Reserve, consists of two parcels of land west of I-5 that provide opportunities for viewing migratory sandhill cranes. The southern parcel is open to the public, and a seasonal 2-hour, docent-led crane tour begins at this location, continuing to the northern parcel, where a parking lot, restroom, and crane viewing blind are provided. The northern parcel can be visited only on these tours. Crane tours generally are available the first three weekends of each month from October to February (California Department of Fish and Game 2009g).

Private Facilities

Twenty-one private marinas, nine yacht clubs, three duck clubs, and one sailing club are located in San Joaquin County. Twenty of the marinas provide boat berths for long-term storage. The marinas include seven small (fewer than 50 berths), nine medium (50 to 200 berths), and five large (more than 200 berths). Over half of the marinas provide a launch ramp (13) and waste pump-out facilities (11), and many also provide campsites (9) and picnicking opportunities (7). Five of the marinas in San Joaquin County also provide houseboat rentals. One marina provides dry storage and fuel facilities. The sailing club and two of the yacht clubs provide boat berthing facilities. The other seven yacht clubs and all three duck clubs do not provide any amenities.

Appendix 15A, Table 15A-1 summarizes the recreational facilities for public and private use in San Joaquin County.

Solano County

Solano County encompasses a portion of the northwestern Delta, west of the Sacramento River, and includes the Cache and Lindsey Slough complex north of Rio Vista. The City of Rio Vista on the Sacramento River is outside of, but immediately adjacent to, the statutory Delta, with the boundary defined by the river in that area. Recreational facilities are not numerous, but several public parks with boat launching facilities and a large private marina in the Rio Vista area provide recreational access to the Delta. Locations of the facilities described for Solano County are shown in Figure 15-4.

The 116,000-acre Suisun Marsh is east of Interstate 680 (I-680), south of SR 12, north of Suisun and Grizzly Bay, and west of the statutory Delta. The marsh provides natural wetlands and essential habitat for hundreds of species and is located along the Pacific Flyway; thus, the marsh is an outstanding place for bird watching, wildlife viewing, and waterfowl hunting. The marsh offers opportunities for fishing, hiking, and boating (DWR 2010a). It includes two public wildlife areas, one public ecological reserve, one public open space area, and many private duck clubs. Unlike the Delta, there are few developed public recreation facilities in the marsh; most developed facilities are at the Rush Ranch Open Space Area and the Grizzly Island Wildlife Area. For locations of the facilities described for the Suisun Marsh area, see Figure 15-5.

The total estimated annual recreation use of Suisun Marsh is about 130,000 user-days, about half of which is attributed to waterfowl hunting at the numerous private duck clubs (Delta Vision 2007). Each season, the Grizzly Island Wildlife Area Complex hosts 7,000–8,000 waterfowl hunters (California Department of Fish and Game 2010a); more than 1,000 pheasant hunters; and fewer than 100 elk, rabbit, and pig hunters. The manager of the complex has estimated more than 45,000 user-days of fishing activity in the marsh (two-thirds in the wildlife area), and more than 12,000 user-days of recreational activity are attributed to nonhunting and fishing activities such as wildlife viewing and dog training, nearly all of which occur in the wildlife area (Delta Vision 2007).

Public Facilities/Areas

Hill Slough Wildlife Area

The 1,723-acre Hill Slough Wildlife Area is just south of SR 12 along Grizzly Island Road (California Department of Fish and Game 2008b; California Department of Fish and Game 2010b). The wildlife area contains a complex of marshes, sloughs, and grassland that supports mammals, raptors, and a large variety of waterfowl. The only activities allowed in this wildlife area are bird watching and wildlife viewing; hunting is not permitted. There are no recreation facilities in the wildlife area (California Department of Fish and Game 2010b).

Peytonia Slough Ecological Reserve

South of SR 12 and west of the Hill Slough Wildlife Area is the Peytonia Slough Ecological Reserve (California Department of Fish and Game 2008b). The reserve can be accessed only by boat from Suisun Slough; the nearest public launch is the Suisun City Boat Ramp. Fishing (including fishing from boats), wildlife viewing, and hiking are permitted activities. Restrooms facilities and graveled foot trails are provided. (California Department of Fish and Game 2010c; California Department of Fish and Game 2010d).

Rush Ranch Open Space

Rush Ranch is located 2 miles south of SR 12 on Grizzly Island Road. This 2,070-acre marsh and grassland area on the northeastern side of Suisun Marsh provides opportunities for recreation and education for thousands of visitors each year (Solano Land Trust 2010a). Recreation opportunities include hiking, wildlife viewing, and bird watching; educational opportunities include visiting the nature center, the Kit House museum, and visitor center. Visitors can also participate in one of the monthly events held at the site, which include volunteer improvement day, blacksmith demonstrations, horse-drawn wagon rides, and interpretive walks (Solano Land Trust 2010a; Solano Land Trust 2010b; Rush Ranch Educational Council 2010). Facilities at the ranch include three self-guided trails, a nature center, and a museum and visitor center. Facilities available for rent at the ranch include a meeting room, picnic/barbeque area, and a fully furnished two-bedroom guest quarters (Solano Land Trust 2010b).

Grizzly Island Wildlife Area

The 15,300-acre Grizzly Island Wildlife Area is a complex of 10 distinct parcels or units, most of which are not connected and are surrounded by private property (California Department of Fish and Game 2010d). The 10 units are located throughout most of Suisun Marsh south of the Hill Slough Wildlife Area and Peytonia Slough Ecological Reserve (California Department of Fish and Game 2009h). The largest unit is the Grizzly Island Unit, which contains most of the wildlife area's facilities and receives much of the hunting use.

The Grizzly Island Wildlife Area provides opportunities for hiking, fishing, wildlife viewing, bird watching, photography, dog training, and hunting. Facilities in the wildlife area include levee trails, parking areas, restrooms, fishing piers, a wildlife-viewing platform, and hunting blinds (California Department of Fish and Game 2010d; California Department of Fish and Game 2010e; California Department of Fish and Game 2010f; California Department of Fish and Game 2010g; California Department of Fish and Game 2005). The Grizzly Island Unit has a 7.5-mile self-guided tour along Grizzly Island Road with stops at the nine parking areas that provide access to the many levee trails in the unit (California Department of Fish and Game 2010e; California Department of Fish and Game 2010g). Fishing is allowed at the Grizzly Island Unit, Island Slough Unit, and Belden's Landing, which is located north of the Island Slough Unit on Montezuma Slough and includes a boat launch facility (California Department of Fish and Game 2010h; Solano County 2010). In the wildlife area, hunting for a variety of species, including waterfowl, dove, pheasant, tule elk, and rabbit, is allowed; however, the different units in the wildlife area have different hunting regulations. Special hunts in the wildlife area include a junior pheasant hunt and two tule elk hunts (one adult and one apprentice). General public use of the wildlife area is not allowed during the tule elk hunts and during the waterfowl hunting season (California Department of Fish and Game 2010i).

Calhoun Cut Ecological Reserve

Calhoun Cut Ecological Reserve, on the far western edge of the Delta, provides fishing and waterfowl hunting. Access to the reserve is by boat only via Lindsey Slough to Calhoun Cut Slough (California Department of Fish and Game 2009i). There are no recreational facilities in the reserve.

Decker Island Wildlife Area

The 35-acre Decker Island Wildlife Area, south of Rio Vista, constitutes the northernmost end of Decker Island along the Sacramento River. The wildlife area is accessible only by boat and provides

opportunities for wildlife viewing and hunting (as regulated by DFG) (California Department of Fish and Game 2009j; California Department of Fish and Game 2008a). No recreational facilities are provided in the wildlife area.

Jepson Prairie Preserve

At the far western edge of the Delta, native bunchgrass prairie and vernal pools are protected in the Jepson Prairie Preserve. The Solano Land Trust owns the preserve, and the University of California Davis supports reserve management. Visitors can participate in docent-guided walks past vernal pool and prairie habitat to glimpse some of the more than 400 plant species in the preserve. Walks are provided on weekends from March through May. No other public recreational activities or facilities are in the preserve (University of California Davis 2009).

Miner Slough Wildlife Area

Miner Slough Wildlife Area is 37-acres and consists of a small island and narrow peninsula where only 10 acres are above high tide. Located at the confluence of Miner Slough and Cache Slough, the wildlife area is accessible only by boat and includes excellent riparian vegetation that supports shorebirds, waterfowl, raptors, and beavers. Bird watching, wildlife viewing, and fishing are allowed. Hunting for waterfowl is allowed during open season. There are no recreation facilities in the wildlife area (California Department of Fish and Game 2010j).

Private Facilities

Private facilities in Solano County are two marinas, one yacht club, and one hunting club. Both of the marinas have boat berths for long-term storage and are of medium size (50–200 berths). A launch ramp and picnicking opportunities are available at both marinas. One of the marinas also has campsites and a fishing pier. The yacht club provides only a dock. The hunting club provides pheasant and chukar partridge hunting on 4,700 acres of land (Gamebirdhunts.com 2009) and also offers camping and fishing.

Suisun Marsh has historically been a popular duck hunting location; around 1880, the first private duck clubs were established in the marsh, and by 1930, the primary use of Suisun Marsh was waterfowl hunting (Stoner 1937 and Arnold 1996 as cited in DWR 2000). Duck hunting continues to be a major use of Suisun Marsh, with 158 private duck clubs located over 52,000 acres in the marsh. These clubs are managed for waterfowl habitat; the wetlands are flooded to coincide with waterfowl season (California Department of Water Resources 2010a; California Department of Water Resources 2010b). At the Suisun Marsh Hunting Preserve, the one licensed game bird club in Suisun Marsh, domestically reared game birds are released to provide additional hunting opportunities (California Department of Fish and Game 2009k).

Yolo County

Yolo County encompasses much of the northern Delta west of the Sacramento River. The Sacramento River Deep Water Ship Channel crosses from north to south through this portion of the county, and the Yolo Bypass occupies the area west of the ship channel. Water-based recreational facilities of the type found throughout most of the other Delta counties are relatively few. The most numerous facilities are private duck hunting clubs in the vicinity of the Yolo Bypass. Locations of the facilities described for Yolo County are shown in Figure 15-6.

Public Facilities/Areas

Clarksburg Fishing Access

Clarksburg Fishing Access, owned and managed by Yolo County, provides a boat ramp, parking, and bank access for boating, waterskiing, and fishing activities. The facility occupies a 3.9-acre shelf of land inside the Sacramento River levee (Yolo County 2009a).

Yolo Bypass Wildlife Area

The Yolo Bypass Wildlife Area, owned and managed by Yolo County, is in the northwestern Delta along the Sacramento River Deep Water Ship Channel. (A small portion of the wildlife area north of Interstate 80 (I-80) is outside the statutory Delta.) It is a major public waterfowl and pheasant hunting area, with several duck blinds and parking areas. Fishing occurs primarily at the East Toe Drain and along Putah Creek. The wildlife area also provides wildlife viewing and photography opportunities. There is an automobile tour route for viewing, and the 16 miles of trails in the wildlife area can be used for viewing and walking/hiking. The Yolo Basin Foundation conducts many educational and interpretive programs in the wildlife area, including the Discover the Flyway school program, Marsh Madness Youth Days, tours of the wildlife area, a vernal pool open house, bat tours, and the California Duck Days wetland festival (California Department of Fish and Game 2008c).

Fremont Weir Wildlife Area

The Yolo Bypass constitutes a floodway for the Sacramento River when the river water level is high. The water spills over at the Fremont Weir into the Yolo Bypass at the 1,461-acre Fremont Weir Wildlife Area. Although no facilities are in the wildlife area, there are opportunities for fishing, bird watching, and wildlife viewing. Hunting is allowed during spring turkey season and daily from July 1 through January 31. Game species found in the wildlife area include pheasant, quail, mourning dove, rabbit, waterfowl, deer, and wild turkey (California Department of Fish and Game 2010k).

Sacramento Bypass Wildlife Area

The Sacramento Bypass Wildlife Area is an element of the Yolo Bypass just north of I-80. The 360-acre wildlife area provides valuable cover and feeding grounds for wildlife, particularly during late fall, winter, and early spring. Fishing in the Tule Canal, wildlife viewing, and bird watching are allowed in the wildlife area. Hunting is also allowed between September 1 and January 31. Game species in the wildlife area include waterfowl, pheasant, and Mourning Dove. No recreation facilities are in the wildlife area (California Department of Fish and Game 2010l).

Private Facilities

The Yolo County portion of the Delta contains seventeen duck clubs, four marinas, and one yacht club. All the marinas and yacht clubs have boat berths for long-term storage. One of the marinas provides a launch ramp, and one offers camping and picnicking opportunities. The yacht club has waste pump-out facilities. Two of the marinas/yacht clubs are small (fewer than 50 berths) and the remaining three are medium (50–200 berths).

Recreation Users in the Delta

Most recreationists who use the Delta live close to the Delta region. The Delta Boating Needs Assessment (California Department of Boating and Waterways 2003) found that 75% of surveyed

boat owners who recently boated in the Delta live within 75 miles of the Delta. This area is referred to as the *Primary Market Area* and consists of 13 counties: Alameda, Calaveras, Contra Costa, Marin, Napa, Sacramento, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, and Stanislaus. The next largest source of boaters who use the Delta is referred to as the *Secondary Market Area* and represents an additional 10% of Delta boaters. The Secondary Market Area consists of the following 14 counties: Amador, Colusa, El Dorado, Lake, Mariposa, Mendocino, Merced, Monterey, Placer, San Benito, Sonoma, Sutter, Tuolumne, and Yolo (California Department of Boating and Waterways 2003).

Many of the recreationists in the Delta are part of recreation organizations, such as fishing clubs, duck clubs, yacht clubs, waterskiing clubs, windsurfing associations, and sailing clubs. Such organizations host events, maintain access sites, promote youth and family participation, provide opportunities to meet other enthusiasts, promote knowledge exchange, and encourage water sports and other recreation skills as well as environmental education.

Recreation Participation

The two dominant recreation uses in the Delta have historically been fishing and boating. Estimates of recreation use in the Delta from a 2002 study (Plater and Wade 2002), which used 1997 as the baseline year, reinforce that these two uses are the main Delta recreation activities. The study estimated that total 1997 Delta recreation use consisted of almost 6.4 million visitor-days (Table 15-3). Almost 75% of this total recreation use was attributed to boating, with 16% attributed to fishing. Day use, which for this study encompassed all other nonboating and fishing activities, accounted for the remaining 10% of total recreation use in 1997. Camping was not treated as a primary activity in the development of these estimates but rather as a secondary activity most often associated with boating and fishing (Plater and Wade 2002).

Table 15-3. Estimates of Boating, Fishing, and Day Use in the Delta

Activity	Visitor-Day[a] Use Estimate (1997)
Boating	4.71 Million
Fishing (from shore and by boat)	1.00 Million
Day Use[b]	0.66 Million
Total Annual Recreation Use	6.37 Million

Source: Plater and Wade 2002

[a] A visitor-day is equivalent to 12 hours of recreation activity. This activity may represent one visitor recreating for 12 hours or more than one visitor recreating for shorter periods.

[b] Day use includes all nonboating or fishing activities.

The Delta Boating Needs Assessment (California Department of Boating and Waterways 2003), from which the previous Delta use estimates were taken, used statewide boater surveys conducted for the assessment to estimate a total of 6.4 million boating-related visitor-days in the Delta for the baseline year 2000. The survey data also were used to estimate peak-day visitation in 2000 of approximately 25,000 visitors. Peak-day activity for small boats was estimated to be approximately 7,800 trips and for large boats approximately 600 trips.

Hunting was described above as a seasonally popular activity in the Delta. Most public hunting use in the statutory Delta occurs at the Yolo Bypass Wildlife Area, with more than 6,000 people participating in the 2008–2009 season. Additional hunting activity occurs during more limited, reservation-only hunts on the DWR lands of Sherman and Twitchell Islands and at Stone Lakes NWR

(Table 15-4). In addition to the Yolo Bypass Wildlife Area, DFG allows hunting at several other small wildlife areas in the Delta where no special permits or reservations are required; no hunter use data are available for these locations.

Table 15-4. Hunting Participation in the Delta at Select Public Hunting Locations

Location	Number of Hunters Participating (2008–2009 Season)
Yolo Bypass Wildlife Area	6,077
Sherman and Twitchell Islands	142
Stone Lakes NWR	190

Sources: California Department of Fish and Game 2010a; U.S. Fish and Wildlife Service 2010a.

Although recreational activities occur year-round in the Delta, the most use occurs in summer. The 1996 survey of Delta boaters indicated that June, July, and August were the months with the greatest boating activity; the month with the least boating activity was December. The 1996 survey of Delta anglers indicated that May, June, and July were the most popular months for fishing, closely followed by August and September (California Department of Parks and Recreation 1997).

Concentrations of recreation activity in the Delta often are related to special events. The most common of these events are bass fishing tournaments, which occur year-round but are particularly prevalent during spring and early summer. As an example, a marina on Brannan Island hosts a bass tournament nearly every weekend throughout spring and summer. In a large bass tournament, participation can be as high as several hundred anglers.

The number of sturgeon fishing tournaments are less numerous; however, an annual 2-day tournament hosted by a Bay Point marina has been attended by more than 1,000 anglers in recent years (Burgarino 2009). A 1996 survey indicated that nearly half of tournament fishing occurs in the western portion of the Delta and that nearly all the remainder occurs in the eastern and central Delta (California Department of Parks and Recreation 1997). The City of Rio Vista, on the Sacramento River, hosts a 3-day bass derby with a carnival, parade, and other activities each October. This event is among several annual community-hosted events in the Delta that draw heavy boat traffic to these communities (Table 15-5).

Table 15-5. Annual Community-Based Delta Recreation Events

Month	Events/Locations
February	Isleton Chinese New Year celebration
April	Asparagus Festival (Stockton)
	Opening day boat parades
	(Bethel Island and numerous other locations throughout the Delta)
July	Fireworks shows (Antioch, Pittsburgh, Rio Vista, and other locations)
	Wimpy's Annual Poker Run (Walnut Grove Area)
	Courtland Pear Fair
August	Walnut Grove Catfish Jubilee
	Bethel Island 50's Bash
September	Delta Big Dog Poker Run
	Delta Blues Festival
	Antioch Riverfront Jamboree
October	Rio Vista Bass Festival

Source: SacDelta.com 2009b.

Numerous fireworks shows and other events are sponsored by Delta towns and marinas each Fourth of July (SacDelta.com 2009b), and many hundreds of boats congregate at favored anchoring locations during that holiday weekend (Contra Costa Water District 2004).

Recreation Participation Trends and Projections

The most recent analyses available predicted steady growth in Delta recreation participation over the past decade (2000–2010), and continued, but slowing, growth in the next decade (2010–2020). The Delta Boating Needs Assessment (California Department of Boating and Waterways 2003) used a variety of models and analyses of trends believed to be indicative of the future growth of boating in the Delta to provide a range of projected annual visitor-days in the Delta out to 2020. With a baseline projection of 6.4 million boating-related visitor-days in 2000, it was projected that annual visitation would increase at the rate of 0.79% per year from 2000 to 2010 (no data are available to establish whether the 2010 use projections were realized) and at the rate of 0.46% per year from 2010 to 2020 to reach 8.1 million annual boating-related visitor-days by 2020. The slowdown of the annual growth rate in the later period is the result of baby boomers (people aged 40–75) moving out of active boating years. The following trends were examined to arrive at these projections.

- Population growth in the state (1.8% annually over the past 20 years).
- Population growth in the Primary Market Area (1.6% annually over the past 20 years).
- Demographics of Delta boaters (primarily Caucasian and between the ages of 40 and 75).
- Trends in California participation rates in boating, fishing, and other outdoor recreation.
- Patterns in boat registration and ownership.
- Environmental restoration anticipated in the Delta.
- Anticipated increases in future summer drawdowns of northern California reservoirs.

The analysis of these trends produced similar projections as an independently developed econometric model. The econometric model was based on a multisite facilities-augmented gravity travel cost model developed to forecast recreation demand for California lakes and adapted for the purpose of making Delta use projections (Table 15-6).

Table 15-6. Delta Boating-Related Recreation Participation Projections

Period	Projected Growth (Visitor-Days)	Projected Participation (Visitor-Days)
2000 (base year)	Not applicable	6.4 million
2000–2010	Annual growth: 50,500 (0.79%) Total growth: 1.0 million (15.8%)	7.4 million (2010)
2010–2020	Annual growth: 34,100 (0.46%) Total growth: 0.7 million (9.2%)	8.1 million (2020)

Source: California Department of Boating and Waterways 2003

15.1.1.2 Description of Existing Conditions in the Upstream of the Delta Region

Recreation conditions in the Upstream of the Delta region at SWP and CVP reservoirs and associated waterways that supply water to the Delta are considered because the action alternatives may have

operational effects on these upstream components of the SWP and CVP. The SWP and CVP reservoirs (from north to south) include Trinity Lake (also referred to as Claire Engle Lake), Shasta Lake, Whiskeytown Lake, Lake Oroville, Folsom Lake, New Melones Lake, San Luis Reservoir, and Millerton Lake. The corresponding SWP and CVP waterways are the Trinity River downstream of Lewiston Dam, the Sacramento River downstream of Keswick Dam, the Feather River downstream of Lake Oroville, the American River downstream of Folsom Lake, the Stanislaus River downstream of New Melones Lake, and the San Joaquin River downstream of Friant Dam.

Recreational Activities and Opportunities Upstream of the Delta

The major SWP and CVP water storage facilities provide substantial opportunity for recreational activities throughout the year. The reservoirs provide on-water boating and angling opportunities in addition to shoreline angling, camping, and day uses. These facilities release flows to the downstream rivers, which also support boating, angling, and shoreline activities.

Reservoirs

Trinity Lake, Shasta Lake, and Whiskeytown Lake are central features of the Whiskeytown-Shasta-Trinity National Recreation Area (NRA), established by Congress in 1965 to provide for public outdoor recreation use and enjoyment, among other purposes (U.S. Forest Service 1996).

Folsom Lake, New Melones Lake, and Millerton Lake are also CVP reservoirs; Lake Oroville is the primary storage reservoir for the SWP. San Luis Reservoir serves both the SWP and CVP. Each of these water bodies and the surrounding lands has been designated as an State Recreation Area.

Trinity Lake

The 19-mile-long Trinity Lake is the focus of the Trinity Unit of the Whiskeytown-Shasta-Trinity NRA, managed by the U.S. Department of Agriculture Forest Service (USDA Forest Service). Water-based recreation opportunities on the reservoir include fishing, houseboating, swimming, and waterskiing; land-based opportunities include wildlife viewing, hiking, picnicking, and camping. Of the 145 miles of shoreline at the lake, developed facilities are concentrated primarily along the shoreline of the Stuart Fork Arm. Recreation facilities include numerous campgrounds (tent, RV, boat-in, horse), picnic areas, boat ramps, resorts, and marinas. Lewiston Lake, also part of the Trinity Unit, is located just south of Trinity Dam and is 7 miles long and much narrower and colder than Trinity Lake. Several recreation facilities located along the western side of Lewiston Lake support recreation opportunities such as camping, fishing, wildlife viewing, bird watching, and boating (USDA Forest Service 2003).

Shasta Lake

Shasta Lake is the largest reservoir in California, with 29,500 surface acres when full. USFS manages the lake and surrounding lands as the centerpiece of the Shasta Unit of the Whiskeytown-Shasta-Trinity NRA. Water-based recreation is the main attraction, and boating is the predominant recreation activity at the lake.

The lake is used year-round for a wide variety of boating and related activities, such as both warmwater and coldwater fishing, and has gained a reputation as a premier houseboating destination. Campers have a choice of more than a dozen public campgrounds and designated shoreline camping areas and a similar number of private campgrounds and RV parks offered at several resorts and marinas on or near the lake (USDA Forest Service 1996). Shasta Lake is bisected

by I-5, which provides easy access in 4 hours or less travel time for more than 5 million residents of Southern Oregon and Northern California, including the major urban populations of Sacramento and the San Francisco Bay Area. Single-day peak-season boating use levels as high as 1,400 boats have been recorded in recent years (Graefe et al. 2005).

Whiskeytown Lake

Whiskeytown Lake is 8 miles west of Redding and is a main feature of the National Park Service-managed Whiskeytown Unit of the Whiskeytown-Shasta-Trinity NRA. The lake provides 36 miles of shoreline and 3,200 surface acres for a variety of water-based recreation opportunities, such as swimming, scuba diving, kayaking, canoeing, rowing, fishing, sailing, waterskiing, and powerboating (personal watercraft are prohibited) (National Park Service 2010a). Recreation facilities at the lake include boat launches, campgrounds, fishing piers, picnic areas, and beaches (National Park Service 2010b; National Park Service 2010c). The area adjacent to the lake includes many primitive campsites and trails for hiking, mountain biking, and horseback riding (National Park Service 2010d).

Lake Oroville

Lake Oroville is near the City of Oroville, at the confluence of the North, South, and Middle forks of the Feather River, about 75 miles north of Sacramento, and covers 15,500 surface acres at full pool. The lake is the focus of Lake Oroville State Recreation Area, which is managed by DPR (California Department of Parks and Recreation 2008b). There are major recreation facilities at several locations around the lake: two full-service marinas, five major and several smaller car-top boat launch ramps, three family campgrounds and several boat-in camps, and ten floating campsites (California Department of Parks and Recreation 2008b). Recreation facilities also are located at the Lake Oroville Visitors Center and at the Thermalito Forebay and Afterbay, both offstream regulating reservoirs downstream of Lake Oroville. The facilities at Lake Oroville State Recreation Area support a wide variety of recreational opportunities, including powered and nonpowered boating, warmwater and coldwater fishing, developed and primitive camping, picnicking, swimming, horseback riding, hiking, and mountain biking. Visitor information sites offer cultural and informational displays about the developed facilities and the natural environment (California Department of Parks and Recreation 2008b).

Folsom Lake

Folsom Lake is 25 miles east of Sacramento, at the confluence of the North and South forks of the American River. With 75 miles of shoreline and 10,000 surface acres of water (California Department of Parks and Recreation 2010a; California Department of Parks and Recreation 2010b), it is the focus of the Folsom Lake State Recreation Area. The State Recreation Area provides several recreation facilities, primarily around the southern portion of the lake. It has two swimming areas, seven boat launches, two small-boat launches, four picnic areas, and one marina at the lake, in addition to two campgrounds (California Department of Parks and Recreation 2010c) and eighty miles of trails adjacent to the lake (California Department of Parks and Recreation 2010b) in the Folsom Lake State Recreation Area.

New Melones Laker

New Melones Lake, constructed in the late 1970s, provides 100 miles of shoreline and 12,500 surface acres of water (Reclamation 2010a). Two developed recreation areas at the reservoir

provide three boat launches, five campgrounds, two group camps, six day-use areas, and one marina (Reclamation 2010b). Also located at the reservoir are several hiking and biking trails, as well as a visitor center and museum that provide information on prehistoric and historic use of the Stanislaus River area (Reclamation 2010a).

San Luis Reservoir

The 12,700-acre San Luis Reservoir is the largest offstream reservoir in the United States (Reclamation and California Department of Parks and Recreation 2005). The reservoir is fed by the California Aqueduct and the Delta Mendota Canal during winter and spring (California Department of Parks and Recreation 2010d). The reservoir and forebay are in the San Luis Reservoir State Recreation Area, managed by DPR. Strong winds at the 2,250-acre forebay provide excellent windsurfing opportunities. Recreation opportunities at the reservoir and forebay include camping, picnicking, hiking, fishing, swimming, and boating. Two recreation sites at both water bodies provide boat launches, day-use areas, and campgrounds (California Department of Parks and Recreation 2010d; California Department of Parks and Recreation 2003). Two adjacent wildlife areas provide hunting and hiking opportunities, and an off-highway vehicle (OHV) area near O'Neill Forebay provides motorized recreation opportunities. A few miles to the southeast lies Los Banos Reservoir, also part of San Luis Reservoir StateRecreation Area. Los Banos is known primarily for its fishing opportunities, although boating, swimming, and camping opportunities are also available. Los Banos Reservoir has a horse camp and hiking and equestrian trails (Reclamation and California Department of Parks and Recreation 2005).

Millerton Lake

Millerton Lake is in the foothills approximately 20 miles northeast of Fresno. The lake is the centerpiece of the Millerton Lake State Recreation Area, managed by California Department of Parks and Recreation. It has a surface area of approximately 4,900 acres at full pool (California Department of Parks and Recreation 2002). The State Recreation Area encompasses approximately 10,500 acres in total (California Department of Parks and Recreation 2006). Motor boating, sailing, waterskiing, jet-skiing, swimming, and fishing are the primary water-based recreation activities. Shoreline activities include picnicking, hiking, biking, horseback riding, seasonal hunting, camping, and wildlife viewing. The State Recreation Area has several boat ramps, picnic areas, drive-in and walk-in campgrounds, a marina, and trails to support these activities (California Department of Parks and Recreation 2002).

Waterways

Trinity River Downstream of Lewiston Dam

The Trinity River from Lewiston Dam downstream to the confluence with the Klamath River at Weitchpec is designated as a federal and California wild and scenic river that runs through private lands, BLM, and USFS (Shasta-Trinity and Six Rivers National Forests) lands, as well as the Hoopa Valley Indian Reservation (Wild and Scenic Rivers Council 2010). SR 299, which follows the river through the Trinity River Gorge west of Junction City, is a designated scenic byway and provides access to the river's recreation facilities (Trinity County 2010; BLM 2010a; USFS 2003). The Trinity River is well known for its salmon and steelhead fishing and its whitewater boating opportunities, with the river waters ranging in difficulty from Class I to Class V (USFS 2010). Several river access points are provided along the river, as well as campgrounds and day-use areas (BLM 2010a; BLM 2010b; USFS 2010).

Sacramento River Downstream of Keswick Dam

The Sacramento River corridor is an important recreation resource for the northern California region and hosts a wide range of recreation uses, including walking/hiking, angling, camping, hunting, horseback riding, picnicking, sports activities, boating (motorized and nonmotorized), and wildlife watching. There are many federal, state, local, and commercial facilities along the river corridor that provide access to the river and riverbanks and support the recreational activities mentioned above. Facilities along the river include boat launches, trail accesses, fishing accesses, RV parks, wildlife areas, undeveloped open space areas, parks, marinas, and trails. Facilities are primarily located from Keswick Dam south to the Bidwell-Sacramento River State Park, near Chico (about 115 river miles downstream from Shasta Dam). From Chico to the northern limit of the statutory Delta at Sacramento (about 140 river miles downstream of Chico), recreational facilities are more widely spaced and fewer in number, although access to the river is available at several federal, state, and local facilities (California State University–Chico 2010).

Feather River Downstream of Lake Oroville

Below Lake Oroville, the Feather River runs through the Oroville Wildlife Area and the communities of Gridley, Live Oak, Yuba City, and Marysville before joining the Sacramento River approximately 70 miles below Lake Oroville at Verona. Recreation activities along the lower Feather River include fishing, boating, hunting, camping, swimming, wildlife viewing, and picnicking. The several miles of river near Oroville and the Oroville Wildlife Area are renowned for trout and salmon fishing. Recreation facilities along this stretch of the Feather River include public and private launch ramps, day-use facilities, camping facilities, and trails (City of Marysville 2010; Yuba County 2010; Sutter County 2008; Yuba City 2010). Riverfront Park in Marysville also offers a golf driving range, OHV course, bicycle motocross (BMX) track, soccer and softball fields, a nature area, and a pavilion (City of Marysville 2010).

American River Downstream of Folsom Lake

Most of the first 6 miles of the American River below Folsom Lake is occupied by Lake Natoma, a downstream regulating reservoir (California Department of Parks and Recreation 2010a) for Folsom Lake formed by Nimbus Dam. Park lands surrounding Lake Natoma are included in the Folsom Lake State Recreation Area, managed by DPR (California Department of Parks and Recreation 2010e). Lake Natoma and the surrounding lands provide opportunities for waterskiing, sailing, windsurfing, rowing, canoeing, kayaking, swimming, fishing, and picnicking. Facilities at three sites on the lake include boat launches, picnic areas, a group camping area, a fishing platform, and a swimming area (California Department of Parks and Recreation 2010c; California Department of Parks and Recreation 2010f). Motorized boating is allowed (with a 5-mph speed limit), but Lake Natoma is best known for nonmotorized boat recreation. At the downstream end of Lake Natoma, the Sacramento State Aquatic Center provides the general public with boating and water safety classes and summer camp and youth programs. The center is a cooperative operation of California State University, Sacramento, the California Department of Boating and Waterways (CDBW), and DPR. The center is a regional boating instruction safety center and rents canoes and kayaks, other types of nonmotorized watercraft, and bicycles (Sacramento State Aquatic Center 2010).

The 23-mile American River Parkway encompasses the entire stretch of the American River from Nimbus Dam to the Sacramento River confluence (Sacramento County Regional Parks 2010a; Sacramento County Regional Parks 2010b). The parkway is administered by the Sacramento County Department of Parks and Recreation. More than 5 million people visit this recreation area each year,

participating in activities such as fishing, boating, rafting, picnicking, walking, biking, swimming, horseback riding, and wildlife viewing (Sacramento County Regional Parks 2010b; Sacramento County Regional Parks 2010c; Sacramento County Regional Parks 2010d). Several parks and access points are located along the parkway (Sacramento County Regional Parks 2010a). The Jedediah Smith Memorial Trail, a 32-mile paved trail that extends the length of the parkway and Lake Natoma, links many of the parkway's facilities and access points (Sacramento County Regional Parks 2010e).

Stanislaus River Downstream of New Melones Lake

Immediately downstream of New Melones Lake is Tulloch Lake, which is surrounded primarily by private property other than two public RV campgrounds and two marinas. Approximately 2 miles south of Tulloch Lake is Goodwin Dam and the beginning of the 58.3-mile reach of the Stanislaus River from Goodwin Dam to the confluence with the San Joaquin River, which is commonly referred to as the Lower Stanislaus River. Although access to the 4-mile stretch of river below Goodwin Dam and Knights Ferry is limited, this segment is used by whitewater boaters (intermediate to expert level) and fisherman and flows through a scenic volcanic gorge. Public river access can be found just below Goodwin Dam, 2 miles downstream at Two Mile Bar, and at Knights Ferry (The Ecological Angler 2010; U.S. Army Corps of Engineers 2010), a historic gold mining-era town. Class I-II rafting (suitable for novice paddlers) is available below Knights Ferry, with floaters taking out at the Orange Blossom covered bridge, 7 miles downstream, or 6 miles farther downstream at Oakdale (American Whitewater 2009). Commercially guided rafting trips are offered on the runs downstream of Knights Ferry (River Journey 2010; Sunshine Rafting 2010).

In addition to providing the river access sites mentioned above, the U.S. Army Corps of Engineers (USACE) provides several other small riverside recreation areas between Knights Ferry and Oakdale and a free visitor center at Knights Ferry. These parks provide campsites, picnic areas, and hiking trails. Little river access is available downstream of Oakdale, with the exception of small USACE access sites adjacent to the communities of Riverbank and Myers and a municipal park in the community of Ripon. A few miles upstream of the confluence with the San Joaquin River is Caswell Memorial State Park, a 258-acre park that offers activities such as camping, picnicking, swimming, fishing, tubing from the campground to the day-use area, bird watching, and hiking (California Department of Parks and Recreation 2010g).

San Joaquin River Downstream of Friant Dam

Recreational activities in and along the San Joaquin River downstream of Friant Dam at Millerton Lake include fishing, boating, nature interpretation and education, trail use, camping, hunting, picnicking, and wildlife viewing/nature observation. The San Joaquin River Parkway is a mosaic of parks, trails, and ecological reserves located along the San Joaquin River between Friant Dam and SR 145 and managed by the San Joaquin River Parkway and Conservation Trust (SJRC 2000; SJRC 2010; San Joaquin River Parkway and Conservation Trust 2010). Use of the parkway is heaviest in summer, and a user survey estimated that the parkway received more than 200,000 visits in 2000, mostly from trail users (Houser and North 2001).

Most of the recreation on the river between Friant Dam and the Merced River occurs in the parkway because this reach provides public land and river access and several developed facilities. Downstream of the parkway, recreation is possible in the river and adjacent to the river in some areas; however, some reaches have been dewatered at most times, and only limited recreation opportunities are available. The San Joaquin River Restoration Program calls for an intermittent

release of water from Friant Dam that provides flows along the entire length of the San Joaquin River. Future phases of the program call for permanent releases from Friant Dam. The Mendota Pool, near the community of Mendota, contains water year-round and is accessible to the public via a county park (City of Mendota 2010). Other use of the river or riverbed in these reaches is assumed to be by adjacent private landowners and possibly other local residents and may include fishing, hunting, and OHV use. The reach of the river just upstream of the confluence with the Merced River crosses units of the San Luis NWR that offer hunting and fishing opportunities (U.S. Fish and Wildlife Service 2010b).

Two Stanislaus County parks provide the only developed recreation access to this segment of the San Joaquin River. The Las Palmas Fishing Access, a few miles east of Patterson, is a 3-acre park that provides a concrete boat ramp and day-use facilities (Stanislaus County 2010a). Laird Park, 2 miles east of Grayson, is a 97-acre "community park" that provides river access and day-use facilities (Stanislaus County 2010b).

The West Hilmar Wildlife Area, on the western bank of the river a few miles downstream of the Merced River confluence, is a 340-acre State Wildlife Area. It has no facilities and is accessible only by boat (California Department of Fish and Game 2010m). The San Joaquin River NWR is located along the San Joaquin River between the Tuolumne and Stanislaus Rivers, two major tributaries to the San Joaquin River. The refuge boundaries encompass more than 7,000 acres of riparian woodlands, wetlands, and grasslands. Although the refuge is primarily undeveloped, a wildlife-viewing platform has been constructed at a favored location for viewing geese and other waterfowl (U.S. Fish and Wildlife Service 2007c).

Recreation Users Upstream of the Delta

As previously described, the reservoirs upstream of the Delta are large, and most are the central features of federally-designated or state-designated recreation areas that provide a variety of public and commercial recreation facilities. Several of these reservoirs are among the largest lakes in the state as measured by surface area. The large areas available for water-based and water-related recreation, and the associated large-scale recreation facilities, allow these areas to host large numbers of visitors each year. Each of these seven upstream reservoirs and the surrounding recreation areas host from nearly 0.5 million to more than 2 million visitors each year. Table 15-7 provides a summary of annual attendance at these locations.

Table 15-7. Annual Attendance at Reservoirs in the Upstream of the Delta Region

Location[a]	Approximate Annual Attendance (Visitors/Visitor-Days[b])
Shasta Unit of Whiskeytown-Shasta-Trinity NRA	2 million visitor-days
Whiskeytown Unit of Whiskeytown-Shasta-Trinity NRA	750,000 visitors
Lake Oroville State Recreation Area	750,000 visitors
Folsom Lake State Recreation Area	2 million visitors
New Melones Lake	800,000 visitors
San Luis Reservoir State Recreation Area	475,000 visitors
Millerton Lake State Recreation Area	500,000 visitors

Location[a]	Approximate Annual Attendance (Visitors/Visitor-Days[b])

Sources: USDA Forest Service 1996; National Park Service 2009; California Department of Parks and Recreation 2002; California Department of Parks and Recreation 2007b; California Department of Parks and Recreation 2009g; California Department of Parks and Recreation 2010c; Bureau of Reclamation 2007; Bureau of Reclamation and California Department of Parks and Recreation 2005.

Notes:

NRA = National Recreation Area

[a] No attendance data were available for Trinity Lake or the Trinity Unit of the Whiskeytown-Shasta-Trinity NRA.

[b] A visitor-day is equivalent to 12 hours of recreation activity. This activity may represent one visitor recreating for 12 hours or more than one visitor recreating for shorter periods, for a total of 12 hours.

Because of the length of the waterways downstream of the reservoirs and the variety of public and private ownership, access, and recreation development on those waterways, recreation use data are not available. However, as alluded to previously, these waterways are important boating, fishing, and other water-based and water-related recreation opportunities and are among the most popular waterways in the state for the pursuit of these activities.

15.1.1.3 Description of Existing Conditions in the SWP and CVP Export Service Areas Region

In general, the Export Service Areas cover several large, noncontiguous portions of California between Napa and San Diego. In northern California, the service areas include Napa, Fairfield, Vacaville, and San Jose, along with a large area around San Jose and south of the city along U.S. Highway 101. In the Central Valley, they cover a corridor along and east of I-5 from Tracy to Bakersfield. On the coast, the service areas include the San Luis Obispo and Santa Barbara areas. In southern California, the service areas include the greater Los Angeles, San Diego, and San Bernardino regions, along with most of the area between these three cities. The service areas also include an area around the northern part of the Salton Sea in Greater Palm Springs.

Because the SWP and CVP Export Service Areas cover such a large part of southern California and parts of the Central Valley and San Francisco Bay Area, a wide range of recreation experiences is available in the service areas, including state wildlife areas and ecological preserves; state parks and state beaches; national forest lands; an NRA; major destinations such as Disneyland and Sea World; and many local, county, and regional recreation sites. Recreation opportunities available in the service areas are plentiful and include activities such as wildlife viewing, bird watching, hiking, biking, hunting, fishing, a variety of boating and water-related activities, horseback riding, picnicking, camping, sports activities, and sightseeing at museums, historic sites, and other locations.

Recreation Activities and Opportunities in the SWP and CVP Export Service Areas Region

South-of-Delta Recreation Use and Activities

San Luis Reservoir

San Luis Reservoir and O'Neill Forebay are in the foothills of Merced County on the west side of the San Joaquin Valley approximately 12 miles west of Los Banos. The reservoir and Forebay compose the San Luis Reservoir State Recreation Area. San Luis Reservoir serves both the SWP and CVP.

When full, San Luis Reservoir has approximately 12,700 surface acres, and both San Luis Reservoir and O'Neill Forebay offer activities such as boating, waterskiing, fishing, camping, picnicking, and trail use. San Luis Reservoir State Recreation Area is open year round. Boat access is available via one boat ramp at the Basalt area at the southeastern portion of the reservoir and at Dinosaur Point at the northwestern portion of the reservoir. The boat ramp at Basalt becomes difficult to use because of low reservoir levels at elevation 340 feet; the boat ramp at Dinosaur Point is difficult to access at elevation 360 feet (San Joaquin River Group 1999). There are no designated swimming areas or beaches at San Luis Reservoir, but O'Neill Forebay (with its stable surface elevation) has popular swimming, boating, fishing, and camping opportunities.

Castaic Lake

Castaic Lake is in the Castaic Mountains in Southern California and has 29 miles of shoreline. Castaic Lake and Lagoon provide many opportunities for recreation. With two boat launch ramps, the upper lake offers visitors a wide range of water sports, such as sailing, waterskiing, powerboating, and fishing. The east ramp is usable (above water) when the surface elevation is at least elevation 1,325 feet above mean sea level (amsl). The west ramp becomes unusable earlier, at surface elevation 1,435 feet amsl (Leahigh 2002 as cited in Environmental Water Account 2003). Castaic Lake supports largemouth bass, bluegill, trout, crappie, and catfish. Castaic Lagoon, south of Castaic Lake, serves as a recreation area and a groundwater recharge basin Overnight camping is available at the lagoon, which features sandy beaches, grassy picnic areas, and a two-lane boat launching ramp. Boating in Castaic Lagoon is limited to non-power boats only; sailing, canoeing, and fishing are popular activities in this area (Environmental Water Account 2003).

Lake Perris

Lake Perris is in northwestern Riverside County, southwest of the city of Moreno Valley. The lake is approximately 2,318 acres, and it includes three boat ramps; a marina; a water slide; two swimming beaches; hiking, biking, and equestrian trails; and picnic and camping areas. Recreation activities at Lake Perris include boating, waterskiing, fishing, swimming, camping, picnicking, horseback riding, bicycling, hiking, hunting, and rock climbing.

In 2005, DWR initiated a drawdown of Lake Perris lowering the level of the lake 25 feet. The drawdown was implemented because the findings of a foundation study completed in 2005 indicated a seismically-induced ground shaking could result in embankment deformations due to the liquefaction potential of sediments under the dam resulting in overtopping of the dam. Several measures, including construction of a causeway providing access to the marina facility and importing 14,171 of sand to allow beach recreational uses, along the adjusted shoreline of the lake

have been implemented by DWR in an effort to maintain recreational activities at the lake (ESA 2010: S-2).

Attendance at Lake Perris decline 47% between 2004 and 2008 in part from the lake drawdown. Paid camping site use has declined approximately 41% (ESA 2010: 3.12-10). The drawdown reduced the surface area of the lake by about 40%. The management of the marina, boating opportunities, and number of slips available have been affected by the drawdown (ESA 2010: 3.12-11).

Pyramid Lake

Pyramid Lake is immediately east of the Los Angeles–Ventura County line in northwestern Los Angeles County and is part of the Angeles National Forest. Recreation facilities at Pyramid Lake include a boat ramp, swimming beach, picnic area, six boat-in recreation areas, and campgrounds. Recreation activities here include boating, waterskiing, fishing, swimming, camping, picnicking, and hiking.

Silverwood Lake

Silverwood Lake is approximately 976 acres and is in southwestern San Bernardino County. Recreation facilities consist of a boat ramp, a cartop boat ramp, swimming beaches, picnic areas, and campgrounds. Boating, waterskiing, fishing, swimming, camping, picnicking, bicycling, and hiking are among the recreation activities at Silverwood Lake.

15.2 Regulatory Setting

15.2.1 Federal Plans, Policies, and Regulations

15.2.1.1 New Melones Lake Area Final Resource Management Plan

The Bureau of Reclamation (Reclamation) recently released the New Melones Lake Area Final Resource Management Plan, which supersedes the 1976 New Melones Lake Area Master Plan. Two of the purposes for the Resource Management Plan are 1) to provide for recreation management and development and ensure that recreation facility management and opportunities are compatible with other resources, and 2) to ensure that planning is based on public need and the ability of land and water resources to accommodate increased visitor use and enhanced facilities. The plan is aimed at balancing "management of recreation uses and resources with management of natural and cultural resources." The alternative involves increasing watercraft use, moderately updating the amount of facility and access area, improving trails, and developing a long-term strategy for managing hunting (Bureau of Reclamation 2010c). The Resource Management Plan also identifies goals and implementation strategies, including the following recreation-related goals.

General Recreation

- **Goals:** Provide for diverse recreation within Reclamation's authorities to afford a safe and quality recreation experience consistent with natural and cultural resource management objectives. Achieve fair value for recreation. Ensure that concessions are planned, developed and managed to meet public needs, are compatible with the natural and cultural resources, and provide a variety of services which are consistent with authorized project purposes.

Aquatic Recreation

- **Goals:** Provide a diverse range of water-based recreation opportunities suited to user needs compatible with the existing character of the lake and surrounding lands. Protect cultural resources, natural resources, and water quality while providing safe and enjoyable recreational experiences.

Land-Based Recreation

- **Goals:** Provide a diverse range of land-based recreation opportunities suited to user needs compatible with the existing character of the project lands. Protect cultural and natural resources while providing safe and enjoyable recreational experiences. Provide specific recreation opportunities and adequate, flexible, and efficient support facilities under varying lake level conditions without compromising ecological resources. Provide a variety of nonmotorized recreational experiences using trails and pathways. Provide safe recreational hunting opportunities compatible with the Wildlife Management Plan, while respecting private property rights and management authority over wildlife resources.

Interpretive Services

- **Goals:** Enhance the public's understanding of the history, purpose, and operation of the project and its archaeological, historical, human-made, natural, and cultural features. Enhance recreation experiences through the Visitor's Center, interpretive services, and volunteer programs. Enhance the quality of recreation for all visitors, including those with physical, sensory, and cognitive impairments. Educate the public about Reclamation, water resources, water conservation, and water safety. Promote stewardship, achieve management objectives, optimize resources, provide enhanced services, and provide educational opportunities.

15.2.1.2 Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan

The Stone Lakes NWR Comprehensive Conservation Plan (U.S. Fish and Wildlife Service 2007a) provides management guidance for visitor use and natural resources (e.g., fish, wildlife, plants) within the refuge for the next 15 years. The approved refuge boundary encompasses more than 17,000 acres of land; USFWS manages approximately one-third of that land, including state- and county-owned land managed under cooperative agreements. Most of the remaining lands are privately owned and are not managed as part of the refuge, although some lands are publicly owned and managed for conservation purposes. The conservation plan identifies goals, objectives, and strategies only for the lands that are currently, or soon to be, managed by USFWS, regarding habitat restoration and enhancement and protection of cultural resources. One goal aims to provide visitors with wildlife-dependent recreation, education, and interpretation opportunities that help them develop an understanding of the unique wildlife and habitat in the refuge. Objectives of this goal include recruiting volunteers, constructing visitor facilities, developing an environmental education program that includes two interpretation programs, providing boat-only fishing and day-use parking, and continuing to expand the outreach program. Proposed facilities to be developed include two photography blinds, restrooms, trails, several parking areas, and wildlife-viewing platforms, as well as a boat-accessible haul-out site and boat launch. An objective of the cultural resource protection goal also includes developing a minimum of two interpretive panels and exhibits.

The plan includes the following goal and objectives.

- **Goal 3:** Provide visitors with recreation, interpretation, and education opportunities that foster an understanding of the refuge's unique wildlife and plant communities in an urban setting.
  - **Objective 3.B:** Construct adequate facilities and develop programs so visitors can come to the refuge seven days a week to observe, photograph and enjoy the refuge's unique natural habitats and wildlife during all seasons of the year with a target of 10,500 visit opportunities per year by 2009.
  - **Objective 3.E:** Within five years, the refuge will provide safe, boat-only fishing with day-use parking facilities to accommodate approximately 20 boats on South Stone Lake and approximately 10 boats on SP Cut from June through September.

15.2.1.3 Management Guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area

The purpose of the 1996 Shasta-Trinity NRA management guide is to integrate past decisions that remain pertinent for managing the Shasta and Trinity units of the NRA with standards, guidelines, and management prescriptions incorporated from the April 1995 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP) (U.S. Department of Agriculture Forest Service 1996). (Management of the Whiskeytown unit of the NRA, administered by the NPS, is not addressed in the guide; see section 15.2.1.4.) The LRMP (U.S. Department of Agriculture Forest Service 1995) is a program-level document that establishes integrated land management direction, including time frames for implementing, monitoring, and evaluating projects, activities, programs, and budgeting in the Shasta-Trinity National Forest for a period of 10–15 years. The NRA management guide provides an analysis of direction from the LRMP; a summary of existing conditions; a description of desired future conditions; and a strategy of management recommendations, opportunities, and mitigation measures that will be used to implement the LRMP and achieve the desired results. The topic of recreation is broken into a series of key subtopics in the management guide: boating and lake management, land-based recreation, special uses, recreation occupancy vessels (i.e., houseboats and similar vessels), and resort/marina standards and guidelines.

15.2.1.4 General Management Plan for the Whiskeytown Unit of the Whiskeytown-Shasta-Trinity National Recreation Area

The General Management Plan for the Whiskeytown unit of the Whiskeytown-Shasta-Trinity NRA (National Park Service 1999) provides recreation-related goals and action programs that emphasize providing a range of water-related activities in a predominantly natural setting, improving backcountry experiences, improving visitor safety, and providing additional interpretation and education opportunities. The plan also outlines a park-wide zoning system. The following goals in the plan relate to recreation.

Preserve Park Resources

- **Goal 7:** Whiskeytown will contribute to regional scenic, cultural, recreational, and ecosystem values.

Public Enjoyment and Visitor Experience

- **Goal 1:** Visitors to Whiskeytown Lake enjoy a wide range of water-based and water-related activities, including the opportunity to enjoy a predominantly natural setting.

- **Goal 2:** Visitors to the backcountry enjoy a variety of activities, including camping, driving for pleasure, trail activities, and hunting using an integrated network of designated backcountry roads and trails.
- **Goal 3:** Visitors enjoy facilities which are clean, safe, convenient, attractive, and accessible to all.
- **Goal 4:** Visitors are safe from crime and are aware of hazards.
- **Goal 5:** Visitors are provided with information on significant natural, cultural, and recreational themes at Whiskeytown, such as watershed restoration, wildlife management issues, Gold Rush history, Wintu culture, and water development history. They have the opportunity to develop an appreciation for the integrity and range of park values, particularly in light of the developing surroundings.
- **Goal 6:** Visitors have the opportunity to participate in educational programs.

15.2.1.5 Boat Navigation Jurisdiction, Rules, and Regulations

U.S. Coast Guard

Title 14 of the United States Code (USC), Title 33, and other portions of the Code of Federal Regulations (CFR), give the U.S. Coast Guard authority for maritime law enforcement on the navigable waters of the United States, as well as responsibilities for search and rescue, marine environmental protection, and the maintenance of river aids to navigation, among other roles. Specific to the Delta, 33 CFR 162 provides regulations for the navigation by both commercial and noncommercial vessels on the San Joaquin River Deep Water Ship Channel (between Suisun Bay and Stockton) and the Sacramento River Deep Water Ship Channel (between Suisun Bay and West Sacramento).

15.2.2 State Plans, Policies, and Regulations

15.2.2.1 Delta Protection Act and Delta Protection Commission Land and Resource Management Plan

The Delta Protection Act of 1992 (Act) (California Public Resources Code Section 21080.22, Division 19.5) established the DPC, a State entity to plan for and guide the conservation and enhancement of the Delta's natural resources while sustaining agriculture and meeting increased recreational demand. The Act defines a Primary Zone, which comprises the principal jurisdiction of the DPC. The Secondary Zone is the area outside the Primary Zone but within the "Legal Delta;" the Secondary Zone is not in the planning area of the DPC. The DPC has appeal authority over local government actions in the Delta's Primary.

Chapter 1 of the Act (Findings and Declarations) includes the following sections (Delta Protection Commission 1992):

- Section 29702 indicates that the basic goals of the State for the Delta include the protection, maintenance, and, where possible, the enhancement and restoration of the overall quality of the Delta environment, including, but not limited to, agriculture, wildlife habitat, and recreational activities.

- Section 29705 indicates that the Delta's wildlife and wildlife habitats are valuable, unique, and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations.
- Section 29710 declares that agricultural, recreational, and other uses of the Delta can best be protected by implementing projects that protect wildlife habitat before conflicts arise.
- Section 29712 acknowledges that the Delta's waterways and marinas offer recreational opportunities of statewide and local significance, are a source of economic benefit to the region, and that public safety requirements will heighten because of increased demand and use.

Chapter 5 of the Act (Resource Management Plan) requires DPC to prepare and adopt a "comprehensive long-term resource management plan for land uses within the primary zone of the Delta." DPC completed the Land Use and Resource Management Plan for the Primary Zone of the Delta in 1995. In February 2010, after 2 years of collaborative effort to revise the plan, DPC adopted a new draft Land Use and Resource Management Plan that includes the following recreation and access policies (Delta Protection Commission 2010).

- **Policy P-1:** Ensure appropriate planning, development, and funding for expansion, ongoing maintenance, and supervision of existing public recreation and access areas.
- **Policy P-2:** Encourage expansion of existing privately-owned, water-oriented recreation and access facilities that are consistent with local General Plans, zoning regulations, and standards.
- **Policy P-3:** Assess the need for new regional public and private recreation and access facilities to meet increasing public need, and ensure that any new facilities are prioritized, developed, maintained, and supervised consistent with local, state, and federal laws and regulations. Ensure that adequate public services are provided for all existing, new, and improved recreation and access facilities.
- **Policy P-4:** Encourage new regional recreational opportunities, such as Delta-wide trails, which take into consideration environmental, agricultural, infrastructure, and law enforcement needs, as well as private property boundaries. Also, encourage opportunities for water, hiking, and biking trails.
- **Policy P-5:** Encourage provision of publicly funded amenities such as picnic tables and boat-in destinations that compliment and are in or adjacent to private facilities, particularly if the private facility will agree to supervise and manage such amenities, thus lowering the long-term cost to the public.
- **Policy P-6:** Support multiple uses of Delta agricultural lands, such as seasonal hunting and provisions for wildlife habitat.
- **Policy P-7:** Support improved access for bank fishing along state highways, county roads, and other appropriate areas where safe and adequate parking, law enforcement, waste management and sanitation facilities, and emergency response can be provided and where proper rights-of-access have been acquired.
- **Policy P-8:** Ensure, for the sake of the environment and water quality, the provision of appropriate restroom, pump-out and other sanitation and waste management facilities at new and existing recreation sites, including marinas. Encourage the provision of amenities including, but not limited to, picnic tables and boat-in destinations.

- **Policy P-9:** Encourage the development of funding and implementation strategies by appropriate governing bodies for the surrender and/or removal of water-borne debris and dilapidated, unseaworthy, and abandoned vessels from waterways to minimize navigational and environmental hazards.
- **Policy P-10:** Promote and encourage Delta-wide communication, coordination, and collaboration on boating and waterway-related programs including, but not limited to, marine patrols, removal of debris and abandoned vessels, invasive species control, clean and safe boating education and enforcement, maintenance of existing anchorage, mooring, and berthing areas, and emergency response in the Delta.
- **Policy P-11:** Recognizing existing laws, encourage establishment of Delta-wide law enforcement protocols on local public nuisance and safety issues, such as trespassing, littering, and theft.
- **Policy P-12:** Support and encourage programs for waterways that provide opportunities for safe boating and recreation, including removal of floating and sunken debris and abandoned vessels from Delta waterways in collaboration with appropriate agencies.
- **Policy P-13:** Support the development of a strategic plan, in consultation with all law enforcement agencies having jurisdiction in the Delta, to improve law enforcement and the use of available resources to ensure an adequate level of public safety. The strategic plan shall identify resources to implement the plan.

The Act also established a provision in the Public Resources Code that calls for local governments with lands in the Primary Zone to ensure that their general plans are consistent with the plan: "Within 180 days from the date of the adoption of the resources management plan or any amendments by the commission, all local governments shall submit to the commission proposed amendments that will cause their general plans to be consistent with the resources management plan with respect to land located within the primary zone" (Delta Protection Commission 1992).

15.2.2.2 California Department of Parks and Recreation Plans

Central Valley Vision

The Central Valley Vision project began in 2003, with the goals of understanding the recreation needs of Central Valley residents over the next 35 years and making recommendations for actions that the DPR might address through expansion of state park facilities in the region. Following the November 2006 release of the Central Valley Vision report, DPR released its Central Valley Vision Draft Implementation Plan in 2008 (California Department of Parks and Recreation 2008c). The draft 20-year plan provides a "catalog of potential future projects" that includes expanding existing parks and adding new parks in the Central Valley. The plan outlines these potential projects in the Delta: acquiring more land; developing facilities and improving access at Delta Meadows; developing interpretation and education opportunities at the Locke Boarding House; expanding facilities at Brannan Island State Recreation Area; and providing recreation at Twitchell, Sherman, and Lower Sherman islands. The implementation plan also recommends creation of the California Delta Heritage Corridor, which would link historic Delta towns, recreation sites, nature areas, and farm stands (California Department of Parks and Recreation 2008c).

Folsom Lake State Recreation Area General Plan and Amendment

The first Folsom Lake State Recreation Area General Plan was approved in 1979. The plan was amended in 1996 to include additional facility recommendations for the Negro Bar (Lake Natoma), Willow Creek (Lake Natoma), and Beals Point (Folsom Lake) areas as part of the American River Bridge Crossing Project at Lake Natoma (California Department of Parks and Recreation 1996b). DPR is updating the general plan for the Folsom Lake State Recreation Area (California Department of Parks and Recreation 2010f).

The original 1979 general plan identifies the objectives for both Lake Natoma and Folsom Lake (included as appendices to California Department of Parks and Recreation 1996b). The following recreation-related objectives were identified for Lake Natoma.

- **Objective 2:** To reduce boat noise on the lake.
- **Objective 3:** To upgrade the quality of existing recreation use areas and to solve the physical problems in these areas.
- **Objective 4:** To minimize environmental damage caused by recreation use and development.
- **Objective 5:** To emphasize low to moderate intensity recreation in developed areas.
- **Objective 6:** To reclaim a portion of lake shore dredger tailings, with small-scale dredging to create islands, channels, and shallow warmwater lagoons for day use.
- **Objective 7:** To tie bicycle, riding, and hiking trails from Sacramento to Folsom Lake and beyond.
- **Objective 11:** To interpret to the public the significant natural and cultural resources of the landscape.
- **Objective 12:** To monitor recreation use and to periodically reassess the ability of the resources to absorb this use; to adjust recreation use as necessary to adequately protect resource values.

The following recreation-related objectives were identified for Folsom Lake.

- **Objective 1:** To emphasize recreation use of Folsom Lake.
- **Objective 2:** To continue to provide existing opportunities for diverse recreational uses of low to high intensity.
- **Objective 3:** To minimize environmental damage caused by recreation use and development.
- **Objective 4:** To upgrade the quality of existing recreation use areas, and to solve physical problems in these areas.
- **Objective 5:** To establish a boat carrying capacity for the lake (to maintain the high quality boating experience on Folsom lake).
- **Objective 6:** To increase opportunities for public access to the lake shore for informal use (fishing, swimming, hiking, etc.).
- **Objective 7:** To encourage boating opportunities for non-boat users.
- **Objective 8:** To provide an opportunity for water-oriented recreation that is not feasible at Auburn Reservoir.
- **Objective 10:** To increase overnight camping and accommodate increasing demand.

- **Objective 11:** To link Folsom Lake with Sacramento via the American River Parkway bicycle, riding, and hiking trail system.
- **Objective 15:** To interpret to the public the significant natural and cultural resources of the landscape.
- **Objective 17:** To monitor recreation use and to periodically reassess the ability of the resources to absorb the use they are receiving; to adjust recreation use as necessary to adequately protect resource values.

General Plan for Bran nan Island and Franks Tract State Recreation Areas

Brannan Island State Recreation Area

The approved purpose of Brannan Island State Recreation Area is "to make permanently available to the people the opportunity to use and enjoy a portion of the Delta region of California and its extensive inland waterways" (California Department of Parks and Recreation 1988a). In addition, "the function of the Department of Parks and Recreation at Brannan Island State Recreation Area is to provide facilities and opportunities for the enjoyment of a variety of water-oriented and other recreational activities, consistent with the declared purpose of the unit" (California Department of Parks and Recreation 1988a).

The General Plan for Brannan Island and Franks Tract State Recreation Areas (California Department of Parks and Recreation 1988a) describes the resource management policies, allowable use levels, land use and facility recommendations, and interpretive recommendations for the two State Recreation Areas. The policies for Brannan Island State Recreation Area focus on maintaining and enhancing the natural resources in the State Recreation Area, some of which relate to recreation, including reducing human-caused erosion and enhancing viewsheds in the State Recreation Area. Allowable use levels in the park vary from low to high, with higher use areas throughout most of the central and southern (along Threemile Slough) portions of the park and low to moderate use areas on the eastern, western (along Threemile Slough near the SR 160 bridge), and northern portions of the park. The general plan also recommends several proposed uses, facilities, and interpretive programs; many have been implemented since1988.

The general plan includes the following land use and development goals for Brannan Island State Recreation Area.

- Provide recreational opportunities for varying use intensity levels in the unit, but with an emphasis on overall high-intensity use.
- Improve existing facilities, and add new ones to provide more recreational opportunities, especially for swimming, boating, boardsailing, camping, and trail activities.
- Improve access to and use of the surrounding water resources, particularly for swimmers, boardsailors, picnickers, campers, boaters, and fishermen.
- Improve visitors' enjoyment of the unit by providing better wind protection, more shade in effective locations, a more attractive environmental setting, and more adequate facilities.
- Provide additional interpretive facilities to explain the cultural and natural history of the Delta and its relevance to the State Water Project.

Franks Tract State Recreation Area

The approved purpose of Franks TractState Recreation Area is "to perpetuate as a recreation resource the flooded island in the Sacramento-San Joaquin Delta known as 'Franks Tract' and to provide permanently the opportunity for water-related recreational activities…" In addition, "the function of the Department of Parks and Recreation at Franks Tract State Recreation Area is to provide facilities and services for public enjoyment of the features and recreational opportunities afforded by this unit" (California Department of Parks and Recreation 1988a).

Franks Tract State Recreation Area encompasses the inundated islands of Franks Tract and Little Franks Tract, and the policies focus on maintaining water quality, protecting soils, and protecting and enhancing habitat and species. Several policies mention considerations for placing new structures or facilities. Allowable use levels are "low" at Little Franks Tract and "moderate" on Franks Tract, except where wetland protection is of greater concern than providing recreation. The general plan also recommends two land use and development goals: creating additional land base for recreation activities and providing minimum needed recreation facilities. The plan outlines the concept of increasing the land base by creating islands in Franks Tract and Little Franks Tract. Facilities planned for the islands at Franks Tract include beaches, picnic areas, floating docks, interpretive signage, and an observation platform. The plan outlines interpretive signage along a water trail for Little Franks Tract. Unlike for Brannan Island State Recreation Area, the facility development recommendations for Franks Tract State Recreation Area have not been implemented.

The general plan includes the following land use and development goals for Franks Tract State Recreation Area.

- Provide low-intensity recreational opportunities by creating additional land base (especially beaches) for recreation activities.
- Provide only the minimum of recreation facilities to accommodate the needs of boat-in visitors.

Lake Oroville State Recreation Area Resource Management Plan and General Development Plan and Amendment

In 1973, the Lake Oroville State Recreation Area Resource Management Plan and General Development Plan were approved. The plans outlined the allowable use intensities and planned development for each area in the State Recreation Area (California Department of Parks and Recreation 1973). In 1988, an amendment to the plan was approved to address three issues in the Lime Saddle area: acquisition of land, disposal of a parcel, and expansion of the existing Lime Saddle Marina (California Department of Parks and Recreation 1988b). DPR completed a new draft general plan in 2005, concurrent with DWR's Lake Oroville facilities relicensing process, but this proposed new general plan is awaiting CEQA review and thereafter will require formal adoption by the California State Parks Commission.

Millerton Lake State Recreation Area General Plan and Amendment

The Millerton Lake State Recreation Area General Plan was approved in 1980. The plan provides guidelines for visitor facility development with an emphasis on recreation activities at appropriate sites and the overall objective of upgrading and enhancing existing recreation facilities. Several major recreation-related enhancements were proposed in the plan (California Department of Parks and Recreation 1979). It was amended in 1983 to allow for additional marina and dry boat storage facilities at the lake (California Department of Parks and Recreation 1983). The overall resource

management objective for the Millerton Lake State Recreation Area in the general plan is to "provide for a high-quality recreational experience in as natural a setting as feasible in relation to the lake and adjacent uplands, while protecting, preserving, and, where possible, restoring the varied resources in perpetuity" (California Department of Parks and Recreation 1979). Recreation-related policies and recommendations in the general plan focus on the following.

- Limiting access to two important cultural and natural areas and maintaining these areas for low-use multiple recreational facilities only.
- Limiting parking to designated camping spurs only.
- Providing submerged hazard signs.
- Enforcing vehicle and boat noise levels.
- Establishing speed limits near the shoreline.
- Exploring alternative methods of preparing the beach for public use.
- Considering relocating and upgrading the area office and ranger residences to provide additional recreational area.
- Considering acquiring scenic areas subject to private residential encroachment.

DPR is currently updating the general plan for the Millerton Lake State Recreation Area (California Department of Parks and Recreation 2010h).

San Luis Reservoir State Recreation Area General Development Plan and Amendment

The General Development Plan for the San Luis Reservoir State Recreation Area was approved in 1971, although the plan was not developed to the same level of detail as later DPR general plans. In 1986, the general development plan was amended to revise the land use designation for about 65 acres of land on the northern side of O'Neill Forebay from undesignated to a day and overnight use designation, thus allowing development of overnight facilities in the Meadows area and boat-in, day-use, and camping facilities in the Grant Line area (California Department of Parks and Recreation 1986). DPR is currently updating the general plan for the San Luis Reservoir State Recreation Area (California Department of Parks and Recreation 2010h).

15.2.2.3 California Department of Fish and Game Plans

DFG owns and manages several areas in the Delta, primarily for habitat and species protection and enhancement. Only two of the seven areas owned by DFG have management plans: Yolo Bypass Wildlife Area and Lower Sherman Island Wildlife Area. Goals and objectives related to recreation and public use in these two plans are described below. The other areas are managed under the current regulations found in the California Fish and Game Code and Title 14 of the California Code of Regulations. Regulations for wildlife areas and ecological reserves, as well as hunting and fishing regulations, can be found in Title 14.

Yolo Bypass Wildlife Area Land Management Plan

The Yolo Bypass Wildlife Area Land Management Plan (California Department of Fish and Game 2008c), prepared for the 16,770-acre state wildlife area, provides guidance on managing habitats, species, and programs, and compatible, appropriate public uses. Two elements of the plan relate to

recreational use: (1) the Authorized Public Use Element, and (2) the Unauthorized Public Use Element. Goals of the Authorized Public Use Element include providing new and increased opportunities for appropriate wildlife-dependent activities, supporting and expanding environmental education and interpretation opportunities, coordinating public access and use to accommodate a variety of users, fostering partnerships, expanding the volunteer program, minimizing user conflicts, supporting use of the wildlife area by Native Americans, and facilitating safe use of the wildlife area. Tasks identified for these goals are numerous and include such items as expanding automobile tour routes, adding signage, adding wildlife-viewing facilities, expanding hunting opportunities, improving the entrance, evaluating the feasibility of additional trails, and adding boating and fishing opportunities. The Unauthorized Public Use Element focuses on preventing unauthorized uses, such as camping or dumping, through such tasks as patrolling the areas and installing signage.

Lower Sherman Island Wildlife Area Land Management Plan

The Land Management Plan for the Lower Sherman Island Wildlife Area Management provides guidance for habitats, species, programs, and appropriate public uses (California Department of Fish and Game 2007). The wildlife area was originally acquired to provide a publicly accessible hunting and fishing area, which is reflected in the goals of the Authorized Public Use Element. The goals of this element focus on supporting compatible public uses and environmental education, providing long-term hunting and fishing opportunities, providing for a variety of users and minimizing user conflicts, evaluating requests by Native Americans for use of the wildlife area, and encouraging safe use of the wildlife area. Tasks related to these goals include providing signage at major access points, periodically reviewing programs and regulations, identifying and resolving conflicts, monitoring and enforcing boat safety regulations, and installing warning signs and buoys. The Unauthorized Public Use Element focuses on goals to discourage trash dumping and prevent unauthorized uses, such as camping. Tasks associated with these goals include monitoring, installing signage, and patrolling the area.

15.2.2.4 California Department of Boating and Waterways Regulations and Programs

One of the primary missions of CDBW is to promote a safer and more enjoyable boating environment. Although boating law enforcement in California is performed at the local level by local agencies, such as county sheriff and municipal marine patrol units, CDBW, through its Boating Law Enforcement Unit, acts to meet the goals of providing for adequate and consistent law enforcement through local agencies throughout the State. California boating laws are contained in several instruments of state law, including the California Harbors and Navigation Code, Vehicle Code, Penal Code, and California Code of Regulations, among others. California boating laws and regulations apply uniformly on all waters of the state. However, California law does not replace the U.S. Coast Guard and other federal regulations in force on federally navigable waters, but it is in general conformity with these laws (California Department of Boating and Waterways 2007a).

CDBW conducts a program focused on providing funding for local boating law enforcement agencies and training of law enforcement personnel (California Department of Boating and Waterways 2007b). Another CDBW program aimed at boating safety is the Aquatic Center Grant Program, through which the department makes grants available for nonprofit organizations, colleges and universities, and local agencies for boating safety education.

CDBW supports the purpose of providing boaters with adequate facilities on the water by providing boat launch facility grants and small craft harbor development loans to public entities. Private marina owners can also apply for construction loans for improvements, such as berthing, restrooms, vessel pump-out stations, boat launching and parking facilities, and dry boat storage. The Aquatic Pest Control Program is focused on controlling Water Hyacinth (*Eichhornia crassipes*) and Egeria (*Egeria densa*), two invasive plant species that can have a substantial impact on recreational activities in the Delta and its tributaries. Finally, the Abandoned Watercraft Abatement Fund is administered by CDBW with the purpose of providing funds to public agencies to remove and dispose of abandoned or wrecked vessels that pose a significant hazard to navigation.

15.2.2.5 California State Lands Commission Regulations

The California State Lands Commission has jurisdiction over nearly 4 million acres of lands that underlie navigable and tidal waterways. Known as "Sovereign Lands," these include riverbeds, streams, sloughs, nonnavigable lakes, tidal navigable bays and lagoons, tide and submerged lands adjacent to the coast, and offshore islands from the mean high tide line to 3 nautical miles offshore. The California State Lands Commission offers leases and permits for marinas, and developers of marinas along the state's navigable rivers, natural lakes, and bays are required by law to lease state land at marina sites. Private landowners who wish to install a recreational pier adjacent to their waterfront residence must likewise obtain a lease from the commission (Delta Protection Commission 2006).

15.2.3 Regional and Local Plans, Policies, and Regulations

15.2.3.1 City and County General Plans

Alameda County

East County Area Plan

The East County Area Plan functions as the general plan document for eastern Alameda County, which extends from the Pleasanton/Dublin ridgeline east to San Joaquin County and from Contra Costa County south to Santa Clara County (Alameda County 2000). Policies seek to promote recreation on open space, agricultural, and watershed lands in the East County area, including the expansion of the existing regional park system and the provision of new trail corridors. The plan contains the following policies on park and recreation facilities.

- **Policy 223:** The County shall support expansion of the existing regional park system…according to the recreational facility standards contained in the East Bay Regional Park District Master Plan, the Livermore Area Recreation and Park District (LARPD) Master Plan, and applicable county-specific plans.
- **Policy 224:** The County shall require new developments to provide trails consistent with EBRPD and LARPD regional trail plans.
- **Policy 225:** The County shall integrate East County trail plans . . . with the California Recreational Trail System.

Contra Costa County

Contra Costa County General Plan

The Contra Costa County General Plan 2005–2020 (Contra Costa County 2005) addresses recreational resources in the Open Space Element. Overall goals and policies generally seek to preserve and protect the county's recreational resource lands. Policies specifically related to major parks and open space areas, local parks, and trails provide protection and enhancement of the recreational value of the Delta, allow only recreational development that complements the natural features of the area, and provide distribution and management of recreational activity according to an area's carrying capacity while recognizing the regional importance of each area's recreation resources.

The county has identified Major Parks and Open Space Areas, some of which are in the statutory Delta. Browns Island Regional Shoreline, Antioch Dunes NWR, Big Break Regional Shoreline, and Franks Tract State Recreation Area are identified as existing parks. The county identifies CALFED Bay-Delta Program wetlands and the Jersey Island Management Area as existing open space. A number of existing neighborhood and community parks are also located in the Delta, with one of each type proposed for Bethel Island. The general plan also illustrates existing and proposed biking, hiking, and equestrian trails on Bethel Island, Hotchkiss Tract, along the Delta shoreline, and in the northeastern portion of the county.

The general plan includes the following policies related to recreation.

- **Policy 3-12:** Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and to assuring balanced land use. Preservation and conservation of open space, wetlands, parks, hillsides, and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, protect unique scenery, and provide a wide range of recreational opportunities for county residents.
- **Policy 3-46:** Water-oriented recreation uses shall be permitted in East County provided that such development is compatible with the Delta's unique ecology.
- **Policy 5-39:** Multiple recreation use, including trail, observation points, and picnicking spots, where appropriate, shall be encouraged along scenic routes.
- **Policy 7-158:** When developing new general purpose public facilities, a balance between social, cultural, and recreational needs of the community being served shall be sought.
- **Policy 8-96:** Land use activities in the immediate vicinity of harbors and adjacent facilities shall be compatible with the continued optimum commercial and recreational operations of the harbor.
- **Policy 9-43:** Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation, such as fishing, boating, and picnicking, shall be provided.
- **Policy 9-44:** As a unique resource of State-wide importance, the Delta shall be developed for recreation use in accordance with the state environmental goals and policies. The recreational value of the Delta shall be protected and enhanced.

The general plan contains additional policies for specific areas, including the following for the Bay Point and Discovery Bay areas, respectively.

(a) The utility of the Delta De Anza Recreational Trail should be enhanced (Specific Plan Policy C-10).

(b) The development concept of the Discovery Bay West project shall provide improved functional integration between the water element, other parks and recreation facilities, and the residential project. Public access to areas east should be explored.

City of Antioch General Plan

The City of Antioch General Plan (City of Antioch 2003) aims to provide a range of parks, specialized recreational facilities, and natural open spaces. Objectives and policies encourage the preservation of significant natural features and specifically seek to secure and develop a shoreline park along the San Joaquin River, with recreational trails and viewing areas for public enjoyment of the waterfront. The Rivertown/Urban Waterfront Focus Area targets the downtown and waterfront areas for revitalization, with an emphasis on creating new land uses along the riverfront, including developing water-oriented recreational facilities. Plans may include expansion of the marina, improvement of the boat launch, constructing a shoreline trail, bocce ball courts, and a continuous park to provide public access to the entire riverfront. The general plan contains the following policies on recreation.

- **Policy 8.9.2 – Parks and Recreation Policies**

  d. Secure and develop a shoreline park along the San Joaquin River consisting of recreational trails, viewing areas, and natural habitat protection so as to ensure availability of the waterfront in the City for public enjoyment.

- **Policy 10.3.1 – Open Space Objective:** Maintain, preserve and acquire open space and its associated natural resources by providing parks for active and passive recreation, trails, and by preserving natural, scenic, and other open space resources.

- **Policy 10.3.2 – Open Space Policies**

  c. Maintain the shoreline of the San Joaquin River as an integrated system of natural (wetlands) and recreational (trails and viewpoints) open space as set forth in the Land Use Element and Public Services and Facilities Element.

City of Brentwood General Plan

The City of Brentwood General Plan (City of Brentwood 2006) seeks to provide park and recreational facilities that support vibrant neighborhoods, nonmotorized circulation, and balanced development. Policies specifically encourage the development of regional recreational facilities in the Delta and the growth of Delta water activities that may be served by Brentwood businesses. The plan directs the city to prepare and adopt a parks, trails, and recreation master plan.

The general plan includes the following policies and associated action programs:

Growth Management Element Action Program

- **Policy 1.3.2 – Conditions:** The City shall consider the effects of new development on park, trail and recreation facilities and programs, and apply conditions to ensure development satisfies the policies of the Parks, Trails and Recreation Master Plan.

- **Policy 1.3.3 – Coordination:** The City shall work with the East Bay Regional Park District to coordinate development with the provision of adequate regional park and recreation facilities. The City shall support the dedication and/or acquisition of land for regional park and trail purposes, as identified in the EBRPD Master Plan, when consistent with the City Parks, Trails and Recreation Master Plan, as a condition of new development.

Economic Development Element Policies and Action Program

- **Policy 1.2 – Tourism/Recreation:** Encourage the growth of recreation and tourism activities within the East County area.
- **Policy 1.2.1 – Recreational Activities:** Encourage and support Delta water activities that may be served by Brentwood businesses.
- **Policy 1.2.3 – Recreational Activities:** Support the East Bay Park Regional Park and Trail System development and use.

Community Facilities Element Action Program

- **Policy 1.7.8 – Community Facilities:** The City of Brentwood shall pursue regional recreational facilities specifically in the areas of the Delta and Los Vaqueros Reservoir, and shall participate in and support regional planning for large-scale recreational uses.

City of Oakley General Plan

The City of Oakley 2020 General Plan (City of Oakley 2002) identifies goals and policies to create a strong connection to the Delta, including the development of recreational facilities and public access. Delta Recreation is a specific land-use designation for open space and recreation lands and encompasses approximately 5 acres in the lowlands of the San Joaquin Delta along the city's northern edge. Because of their proximity to the Delta, these lands have substantial recreational value and offer important opportunities for public access to the Oakley waterfront, including parklands and trails. Agriculture and wildlife habitat are also considered appropriate uses, and the City of Oakley may also allow marinas, shooting ranges, duck and other hunting clubs, campgrounds, golf courses, and other outdoor recreation complexes in this designation (City of Oakley 2002).

The general plan includes the following policies related to recreation.

- **Policy 1.1.6:** Ensure a strong physical connection to the Delta including convenient public access and recreational opportunities.
- **Policy 7.1.5:** Maintain and improve existing parks and develop new neighborhood and community parks in new residential neighborhoods as growth occurs.
- **Policy 7.4.3:** Manage shoreline and regional parks along Oakley's waterfront such as the Big Break and Dutch Slough shoreline in a manner that provides for appropriate public access and enhances the natural environment.
- **Policy 7.4.5:** Support and encourage boat access and marinas. Consider additional marina facilities if proposed and appropriate.
- **Policy 7.4.11:** Protect the visual accessibility of waterways by avoiding future development that creates visual barriers adjacent to or along the water's edge.
- **Policy 7.4.12:** Promote the development or preservation of a private or public marina with boat launching and berthing facilities, a fuel dock and waste pump-out station, restrooms and

showers, laundry facilities, a bait/tackle/food store, day use, overnight camping, and RV parking areas, a fishing pier, and a restaurant.

City of Pittsburg General Plan

The City of Pittsburg General Plan (City of Pittsburg 2004) notes that although nearly 3 miles of shoreline lie within Pittsburg city limits, public access to the Suisun Bay waterfront is lacking. Two small parks and several small-craft marinas exist adjacent to the downtown area. The plan identifies goals and policies to maximize public access and recreational facilities along the waterfront, including developing pocket parks, a waterfront trail/bikeway, and possible facilities on Browns Island (a unit of the EBRPD). The plan references the City of Pittsburg's Parks, Recreation, and Open Space Master Plan as a document to bridge the gap between general plan policies and the actual detailed planning and development of park and recreational facilities (City of Pittsburg 2004).

The general plan includes the following goals and policies that address recreation.

- **Policy 8-P-17:** Work with East Bay Regional Parks District to explore the possibility of developing passive recreation uses and educational programs on Browns Island, such as boating excursions to view waterfowl nesting areas.
- **Policy 8-P-19:** Cooperate with East Bay Municipal Utility District to ensure continued public access to the Delta De Anza Trail along the Mokelumne Aqueduct right-of way.

- **Goal 8-G-5:** Maximize public access to and recreational facilities along the City's waterfront areas.
  - **Policy 8-P-26:** Explore all potential improvements to fully integrate the City's shoreline into the urban fabric, including:
    - Waterfront Parks. Pursue and develop small pockets of open space that provide physical and visual access to the waterfront.
    - Waterfront Trail/Bikeway. A linear park along the shoreline, featuring a path for both walking and biking, would encourage more vibrant activity along the waterfront.

Sacramento County

Sacramento County General Plan

The County of Sacramento is updating its general plan. Several draft elements of the updated plan (the 2030 General Plan) with relevance to Delta recreation have been completed: the Delta Protection Element (County of Sacramento 2009b), which contains "Recreation and Access" and "Marine Patrol, Boater Education, and Safety Programs" sections, and the Open Space Element (County of Sacramento 2009c). Between June 2009 and February 2010, the Sacramento County Planning Commission conducted hearings to discuss various elements; the Draft Open Space and Delta Protection Elements were discussed at January 2010 hearings. County planning staff prepared a staff report for use during each hearing.

The staff report addressing the Draft Delta Protection Element (County of Sacramento 2010) states that the draft element is based on the 1995 Land Use and Resource Management Plan for the Primary Zone of the Delta (Delta Protection Commission 1995), which the DPC is amending (see Section 15.2.2.1 for discussion of the plan). Therefore, county staff recommended that the planning commission defer further discussion of the Delta Protection Element until the DPC adopts the new

plan and the county decides how best to adopt it into the general plan (as had been done with the 1995 plan).

As alluded to previously, the policies enumerated in the Recreation and Access section of the Draft Delta Protection Element reiterate verbatim the policies contained in the 1995 plan, and it is assumed that the final version of the Delta Protection Element will match the policies contained in the newly adopted updated plan (listed above in Section 15.2.2.1). Although the Recreation and Access section title within the newly adopted plan indicates that "marine patrol, boater education, and safety programs" are included in the section, no specific policies addressing these topics are enumerated. However, the section of the Draft Delta Protection Element that addresses those topics contains 13 policies that primarily provide local governments with guidance for developing marine patrols and boater education and coordination of those functions with the Coast Guard, DFG, and other agencies.

The draft Open Space Element defines several categories of urban and rural open space. Rural recreation open space is defined as "natural areas that provide for passive recreation such as wildlife viewing and pedestrian and bicycle travel, as well as wildlife habitat" that "may encompass historic sites, scenic vistas, and trails." The element includes a new Open Space Vision Diagram that identifies lands where future conservation actions may be directed, with the cooperation of willing landowners. The diagram identifies much of the portion of Sacramento County that lies in the statutory Delta as first or second priority open space areas owing to the conjunction of agricultural, habitat, flood protection, and/or recreation attributes.

City of Sacramento General Plan

The City of Sacramento formally adopted its new 2030 general plan on March 3, 2009 (City of Sacramento 2009c). The Sacramento 2030 General Plan identifies general policies and goals to provide a system of parks, water corridor parkways, and trails throughout the city. The eastern bank of the Sacramento River falls under the Open Space/Parks/Recreation designation, and the City of Sacramento seeks to continue to conserve, enhance, and provide public access to designated open space areas along the river. Allowed uses in Open Space include natural parks; woodlands; habitat; agriculture; floodplains; areas with permanent open space easements; buffers between urban areas; and compatible public, quasi-public, and selected special uses. Allowed uses include community and regional parks, greenways, trails, golf courses, and commercial recreational facilities with an outdoor emphasis. Implementation measures direct the city to update its parks and recreation master plan every 5 years to coincide with general plan updates.

The general plan includes the following goal and policies.

- **Goal LU 2.2 – City of Rivers:** Preserve and enhance Sacramento's riverfronts as signature features and destinations within the City and maximize riverfront access from adjoining neighborhoods to facilitate public enjoyment of this unique open space resource.

  - **Policy LU 2.2.1 – World-Class Rivers:** The City shall encourage development throughout the City to feature (e.g., access, building orientation, design) the Sacramento and American Rivers and shall develop a world-class system of riverfront parks and open spaces that provide a destination for visitors and respite from the urban setting for residents.

Open Space, Parks, and Recreation Policies:

- **Policy LU 9.1.1 – Open Space Preservation:** The City shall limit, to the extent feasible, the wasteful and inefficient conversion of open space to urban uses and place a high priority on acquiring and preserving open space lands for recreation, habitat protection and enhancement, flood hazard management, public safety, water and agricultural resources protection, and overall community benefit.
- **Policy LU 9.1.3 – Connected Open Space System:** The City shall ensure that new development does not create barriers to the connections among the various parts of the City's parks and open space systems.

The Pocket Community Plan focuses on an 8-square-mile area bounded on the north by 35th Avenue and the Sacramento River, on the south and west by the Sacramento River, and on the east by Freeport Boulevard. Policies unique to the plan area seek to improve and expand parkway-greenbelt-open spaces, including along the Sacramento River. The following Recreation, Education, and Culture policies are included in the Pocket Community Plan:

- **Policy P.ERC 1.1 – Parkways/Greenways:** The City shall improve and maintain public parkway-greenbelt-open spaces which are visual assets to the neighborhoods.
- **Policy P.ERC 1.2 – Recreation Area Landscaping:** The City shall continue to pursue acquisition of the Sacramento River Parkway recreation node near Florin Road and ensure it is suitably landscaped to protect nearby residents.

American River Parkway Plan

The American River Parkway Plan 2008 (County of Sacramento 2008) is a policy and action document that provides guidance on land use decisions affecting the parkway. The plan also acts as the management plan for the Federal and State Wild and Scenic Rivers Acts (the lower American River is classified as a "Recreation" river in the State and Federal Wild and Scenic River Systems). According to the plan, "[t]he American River Parkway is a unique regional facility which shall be managed to balance the goals of: a) preserving naturalistic open space and protecting environmental quality within the urban environment, and b) contributing to the provision of recreational opportunities in the Sacramento area." The following goals are included in the plan.

- To provide, protect and enhance for public use a continuous open space greenbelt along the American River extending from the Sacramento River to Folsom Dam.
- To provide appropriate access and facilities so that present and future generations can enjoy the amenities and resources of the Parkway that enhance the enjoyment of leisure activities.
- To preserve, protect, interpret and improve the natural, archaeological, historical and recreational resources of the Parkway, including an adequate flow of high quality water, anadromous and resident fishes, migratory and resident wildlife, and diverse natural vegetation.
- To mitigate adverse effects of activities and facilities adjacent to the Parkway.
- To provide public safety and protection within and adjacent to the Parkway.

Policies in the plan touch on many topics, including permitted recreational activities and facilities; prohibited activities and facilities; allowable group activities; permitted commercial activities; and appropriate location, use, and design of public access and trails. The plan also includes guiding concepts for management. The following policies are relevant to recreation:

- **Policy 1.1 Balanced Management:** The American River Parkway is a unique regional asset that shall be managed to balance the goals of controlling flooding; preserving and enhancing native vegetation, native fish species, the naturalistic open space and environmental quality within the urban environment; maintaining and improving water flow and quality; providing adequate habitat connectivity and travel corridors to support migratory and resident wildlife; providing recreational opportunities; and ensuring public safety.
- **Policy 1.2 Recreation:** The Parkway shall be oriented to passive, unstructured water-enhanced recreation activities which are appropriate in a natural environment, and which are not normally provided by other County recreational facilities. To this end, developmentin the Parkway shall be minimal, and facilities which are primarily visitor attractions should be placed in less sensitive areas within the County Park system. Insofar as possible, development shall not occur in areas where natural ecosystems are still relatively undisturbed.
- **Policy 1.3 Resource Protection:** Limitation on the use of the Parkway through design and management tools to prevent overuse of the Parkway and preserve the environmental quality, thereby ensuring the integrity of the Parkway for future users.

The following policies are specific to the Discovery Park area.

- **Policy 10.9:** Maintain the existing boat access points in their current locations and in a manner that protects and improves water quality and bank stability.
- **Policy 10.10:** Create short-term equestrian trailer parking and an equestrian staging area that includes appropriate facilities such as water, hitching posts, and a manure bunker.
- **Policy 10.11:** Any improvements in the park must be able to withstand inundation for one to several months each year.

San Joaquin County

San Joaquin County General Plan

The *San Joaquin County General Plan 2010* (San Joaquin County 1992) notes that the Delta provides for considerable recreation and enjoyment of the county's water resources. It identifies substantial resource areas for recreation, including the waterways of the Delta and the Mokelumne River. The plan objectives seek to "protect the diverse resources upon which recreation is based, such as waterways [and] marsh lands" and "ensure the preservation of the Delta as a recreational resource" (San Joaquin County 1992). Policies specific to the Delta identify it as an area of international importance and a major recreational resource of the county and limit development on the islands to water-dependent uses, recreation, and agriculture. The general plan includes the following objectives and policies that address recreation:

Open Space

- **Policy 6:** The County shall consider waterways, levees, and utility corridors as major elements of the open space network and shall encourage their use for recreation and trails in appropriate areas.

Economic Development

- **Policy 5:** The County shall recognize the recreation potential of the Delta and its other waterways and shall promote recreation-based employment in the County.

Public Facilities

- **Objective 2:** To protect the diverse resources upon which recreation is based, such as waterways, marsh lands, wildlife habitats, unique land and scenic features, and historical and cultural sites.
- **Objective 3:** To ensure the preservation of the Delta and the opportunity for the public to learn about and enjoy this unique recreation resource.
  - **Policy 7:** Natural features shall be preserved in recreation areas, and opportunities to experience natural settings shall be provided.
  - **Policy 13:** Recreational use of the County's waterways will be supported, and the County shall ensure adequate public access to waterways at selected locations.
  - **Policy 14:** Water-related resources shall be protected for their importance to recreational uses.
  - **Policy 15:** The recreational values of the Delta, the Mokelumne River, and the Stanislaus River shall be protected.
  - **Policy 16:** The recreational potential, particularly for trails, of the Calaveras River, the San Joaquin River, the Stockton Diverting Canal, and water conveyor projects shall be recognized and studied. The potential for land use conflicts associated with public use of waterways (e.g., trespassing, littering, vandalism) should be assessed for selected recreation sites.
  - **Policy 17:** The Delta shall be recognized as an area of international importance and as a major recreational, wildlife, agricultural, and economic resource of San Joaquin County.
  - **Policy 18:** Waterway development and development on Delta islands shall protect the natural beauty, the fisheries, wildlife, riparian vegetation, and the navigability of the waterway.
  - **Policy 19:** Development in the Delta islands shall generally be limited to water-dependent uses, recreation, and agricultural uses.

Solano County

Solano County General Plan

The Solano County General Plan (Solano County 2008) identifies policies to maintain and expand public access and recreational activities in Suisun Marsh, such as duck hunting, boating, fishing, and nature study. The Suisun Marsh Addendum notes the opportunities for increasing the recreation diversity and public access in the marsh, particularly given the increase in demand expected to accompany population growth, and identifies related policies. The Park and Recreation Element (Solano County 2003), adopted before the most recent general plan, identifies general policies for managing and improving the county's park and recreational facilities. Solano County land located in the statutory Delta is designated as agricultural. The general plan includes the following policies specific to recreation in the Suisun Marsh and the Delta:

- **Policy RS.P-18:** The County shall ensure that public access at appropriate locations is provided and protected along the County's significant waterways within the Suisun Marsh.
- **Policy RS.P-26:** Promote continued recreational use of the land and waters of the Delta, including fishing and boating; ensure needed recreational facilities are constructed, maintained,

and supervised; protect landowners from unauthorized recreational uses on private lands; and maximize dwindling public funds for recreation by promoting public private partnerships and multiple uses of Delta lands consistent with the Land Use and Resource Management Plan for the Primary Zone of the Delta.

- **Policy RS.P-28:** Protect long-term water quality in the Delta in coordination with water agencies at local, State, and Federal levels for designated beneficial uses, including agriculture, municipal, water-dependent industrial, water-contact recreation, boating and fish and wildlife habitat.

Additional objectives and associated policies in the Park and Recreation Element include the following.

- **Objective 3:** Identify, preserve and manage significant regional recreation and natural areas.
  - **Policy C:** The County shall work to protect identified recreational sites and natural resource areas.
- **Objective 4:** Ensure that land use surrounding existing and potential County regional parks are compatible with park resources and public use.
  - **Policy A:** Areas surrounding regional parks should be maintained in open space or other compatible uses to protect the natural setting and environment of the park site.
  - **Policy B:** Land use development proposals adjacent to regional parks shall be reviewed for compatibility with natural and recreational features and uses of the park.
- **Objective 5:** Encourage appropriate multiple uses of public land for recreation and other uses.
  - **Policy A:** The County shall make the optimum use of public lands by developing or promoting development of facilities that are compatible with the primary resources of the site.

The *Suisun Marsh Policy Addendum* (Solano County 2008) states that recreation use in the marsh should be guided through the following policies.

- **Policy 1:** Within the Suisun Marsh, provision should be made for public and private recreational development to allow for public recreation and access to the Marsh for such uses as fishing, hunting, boating, picnicking, hiking and nature study.
- **Policy 2:** Recreational uses in the Marsh should be located on the outer portions near population centers and easily accessible from existing roads.
- **Policy 3:** Recreational activities that could result in adverse impacts on the environment of the Suisun Marsh should not be permitted.
- **Policy 4:** Additional land should be acquired within the Suisun Marsh to provide for increased public duck hunting recreational use and additional refuge areas for waterfowl during the hunting season, Acquisition priority should be given to those lands not now operated as managed wetlands.
- **Policy 5:** Land should also be purchased for public recreation and access to the Marsh for such uses as fishing, boat launching, nature study, and for scientific and educational uses. These areas should be located on the outer portions of the Marsh near the population centers and easily accessible from existing roads. Improvements for public use should be consistent with protection of wildlife resources.

- **Policy 6:** Public agencies acquiring land in the Marsh for public access and recreational use should provide for a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking, and nature study.
- **Policy 7:** Agencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintained litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.
- **Policy 8:** Recreational activities that could result in adverse impacts on the environmental or aesthetic qualities of the Suisun Marsh should not be permitted. Levels of use should also be monitored to insure that their intensity is compatible with other recreation activities and with protection of the Marsh environment. For example, boat speeds and excessive noise should be controlled and activities such as water skiing and naval training exercises should be kept at an acceptable level.

City of Rio Vista General Plan

The Open Space and Recreation Element of the *Rio Vista General Plan* (City of Rio Vista 2002) identifies goals, policies, and actions regarding the long-term future of parks and open space in the city. The city has five neighborhood parks, two community parks, a fishing access and pier, a public dock and launch, and a marina. The city also operates paths, a golf course, a museum, a youth center, and a senior center. It will have conveyed to it the former U.S. Army Reserve Base, southwest of downtown Rio Vista on the Sacramento River. A condition of the conveyance is that the city must use the property for recreational purposes. Goals and policies in the Recreation Element relate to providing public access and viewing opportunities on the Sacramento River, creating an open space system, developing a comprehensive trails system, and supporting preservation and enhancement of natural resources. Parks and recreation goals include providing a variety of opportunities for city residents, well-designed parks and recreational facilities, city parks consistent with the rate of residential development, and well-designed parks that enhance neighborhood identity and character. The general plan includes the following goals and policies that address recreation:

- **Goal 5.4:** To protect and develop native habitat and create a variety of recreational experiences.
- **Goal 9.1:** To provide public access and view opportunities on the Sacramento River to the maximum extent feasible.

  Policy 9.1.C: The City shall enhance the Sacramento River and its waterfront as a scenic resource consistent with water-oriented recreation.

  Policy 10.1.C: The City shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible.

  - High erosion hazard areas
  - Scenic and trail corridors
  - Streams and riparian vegetation
  - Wetlands
  - Drainage corridors

- Other significant stands of vegetation
- Wildlife corridors
- Key hilltops
- Views of the Sacramento River
- Any areas of federal, state, or local significance
- Sensitive Local Resource Areas

  - **Policy 10.3.A:** The City shall ensure that agricultural operations, natural resource protection, water-related recreation, and public facility uses shall remain the only allowable uses in the Delta Primary Zone.

- **Goal 10.4:** To preserve and protect biological resources for their wildlife habitat, aesthetic, and recreational values.

Sutter County

Sutter County General Plan

Sutter County is updating its general plan with the intent of adopting a final plan in fall/winter 2010 (Sutter County 2010). The existing general plan (Sutter County 1996) identifies a policy to maintain and improve the distribution of parks in the county. The implementation program for recreation directs the county to prepare a county park and recreation master plan.

The plan's Conservation Element includes the following goal and policy related to recreation:

- **Goal 5.A:** To provide adequate park and open space areas for passive and active recreational, social, educational and cultural opportunities for the residents of Sutter County.

  - **Policy 5.A-1**: The County shall strive to maintain and improve the distribution of local and regional parks to support the recreational needs of Sutter County residents.

Yolo County

Yolo County General Plan

The 2030 countywide general plan (Yolo County 2009b) notes the existing "resource" parks in the county, several of which are along the Sacramento River (Knights Landing River Access, Elkhorn Regional Park, Helvetia Oak Grove, and Clarksburg River Access Park), and provides a map of future parks and trails, including expanded Sacramento River access and trail linkages, a gateway park to the Yolo Bypass, trail linkages along the Sacramento River between Knights Landing and Clarksburg, a gateway park in the Delta region, and a new California Indian Heritage Center. The Conservation and Open Space Element of the plan identifies policies to increase public access, trail linkages, and recreational use along waterways, particularly the Yolo Bypass and the Sacramento River.

The plan's Conservation and Open Space Element includes the following policy specifically related to recreation in the Delta region.

- **Policy CO-9.14:** Establish Clarksburg as a gateway entry for visitors to the Delta region seeking agricultural tourism, ecotourism, and recreational opportunities.

The following additional policies and associated implementation actions also address recreation.

- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support agriculture, recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.
- **Policy CO-1.2:** Develop a connected system of recreational trails to link communities and parks throughout the county.
- **Policy CO-1.3:** Create a network of regional parks and open space corridors that highlight unique resources and recreational opportunities for a variety of users.
- **Policy CO-1.6:** Develop "gateways" or trailheads that provide access for the public to County, State, and Federal lands. Where located on private land, gateways shall be developed working with willing landowners.
- **Policy CO-1.8:** Encourage responsible stewardship of private lands. Promote increased opportunities for public access to waterways and other natural areas.
- **Policy CO-1.12:** Create opportunities for ecotourism.
- **Policy CO-1.24:** Increase public access and recreational uses along waterways wherever feasible, particularly Cache Creek, Lower Putah Creek, the Yolo Bypass, and the Sacramento River.
- **Policy CO-1.25:** Allow for specified areas of resource parks to be preserved, enhanced and/or restored as mitigation sites for public agencies only, consistent with the requirements of appropriate regulatory and funding agencies, provided that adequate compensation, including funding for operations and maintenance of the mitigation, is provided.
- **Policy CO-1.26:** Support development of a new California Indian Heritage Center in the City of West Sacramento.
- **Policy CO-1.27:** Support improved access for bank fishing.
- **Policy CO-1.29:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.
    - **Action CO-A6:** Connect the future Bay Delta Trail system, the future trail system in the lower Yolo Bypass, and the future Cache Creek Parkway system, and link those trails to the American River Bikeway system in Sacramento County.
    - **Action CO-A11:** Provide recreational uses that are river or creek dependent in locations directly on Cache Creek, Putah Creek, and the Sacramento River. Examples include fishing, canoeing, boating, and nature observation. With the exception of boat launches and docks, more active uses, such as parking, restrooms, and picnic areas, shall be located in areas away from the river and sensitive riparian habitat.
    - **Action CO-A14:** Implement the Elkhorn Specific Plan to establish a resource park and public access to the Helvetia oak grove, create public access along the waterway north of County Road 22, and integrate management of both sites with the nearby Elkhorn Regional Park.

An updated parks master plan is referred to as the document to implement Conservation and Open Space Element goals and policies.

City of West Sacramento General Plan

The City of West Sacramento General Plan identifies the goal of enhancing the relationship between the city and the Sacramento River (City of West Sacramento 2004). Related policies protect and enhance public access to the Sacramento River along the entire riverfront, promote the development of marinas, important scenic areas, and open space and pedestrian links to other parks and open space areas. The plan also identifies policies to increase access to the Sacramento River Deep Water Ship Channel, including the development of water-oriented park and recreational facilities.

Goals and associated policies in the Recreation and Cultural Resources Element include the following.

- **Goal A:** To establish and maintain a public park system and recreation facilities suited to the needs of West Sacramento residents and visitors.
  - **Policy 12:** The City shall identify appropriate open spaces, including areas within the Central Business District and along the Sacramento River, for development of safe community activity areas.
- **Goal B:** To promote the provision of private recreational facilities and opportunities.
  - **Policy 4:** The City shall encourage development of new marinas in appropriate locations on the Sacramento River and along the Barge Canal.
  - **Policy 6:** The City supports the use of the barge canal for aquatic recreational activities, such as sailing, rowing, kayaking, and canoeing, and supports the establishment of a multi-use aquatic facility along the barge canal. Aquatic parks, boat houses, docks, and other support facilities for boating shall be deemed compatible uses along the Deep Water Ship Channel and the barge canal within all land use designations.
- **Goal D:** To provide and encourage, to the fullest extent possible, public access to the Sacramento River and Deep Water Ship Channel for recreation purposes.
  - **Policy 1:** The City shall ensure continuous public access to the Sacramento River for its full length within West Sacramento.
  - **Policy 2:** The City shall seek to ensure continuous public access to the Deep Water Ship Channel, within the limits imposed by safety considerations.
  - **Policy 3:** Linear access to the Sacramento River and Deep Water Ship Channel shall be linked to the City's overall system of parks, recreational pathways, and open space. To this end, the City shall require the dedication of public access easements through new developments along the Sacramento River and Deep Water Ship Channel.
  - **Policy 4:** The City shall encourage the development of public and private marinas in appropriate locations on the Sacramento River and along the Deep Water Ship Channel. Siting and development of marinas shall avoid, as much as possible, areas of significant existing riparian vegetation.
  - **Policy 5:** The City shall support and encourage the development of public and private water-oriented park and recreational facilities along the Sacramento River and the Deep Water Ship Channel.
- **Goal E:** To provide a network of pedestrian and bicycle pathways connecting parks and open space areas with other destination points within and beyond the City of West Sacramento.

- **Policy 2:** The City shall implement a Riverfront Park Master Plan that provides for a system of continuous pedestrian and bicycle pathways along the Sacramento River.
- **Policy 4:** The City shall coordinate the development of the riverfront as envisioned in the 1997 Sacramento Greenway Plan.

Other Local Policies and Regulations

Cosumnes River Preserve Management Plan

The Cosumnes River Preserve is a conglomeration of lands owned in fee title by several agencies and lands held under conservation easement. The Cosumnes River Preserve Management Plan (Cosumnes River Preserve 2008) directs how the preserve will be managed over the next 10 years. Goals, objectives, and actions are related to improving stewardship of the preserve through compatible uses. Goals include ensuring that recreational use, the volunteer program, the education program, and scientific research are compatible with natural resource stewardship goals, and that they promote teaching of environmental stewardship, and have adequate, stable funding. Objectives of the recreational use goal include tracking use more accurately, continuing existing opportunities, exploring opportunities for additional recreation amenities and providing new recreation experiences, continuing the trail system, maintaining a safe environment, reducing inappropriate uses, and securing funding.

The plan includes the following recreation objectives and associated actions for implementation.

Recreation Objectives

- **Objective 1.2:** Promote and enhance existing recreational opportunities.
- **Objective 1.3:** Explore opportunities for additional recreational amenities that are consistent with the five key factors and three feasibility factors.
- **Objective 1.4:** Explore the feasibility of providing a wider range of recreational experiences not currently allowed on the Preserve (e.g., horseback riding, camping, OHV use, and mountain biking) that are consistent with the five key factors and three feasibility factors.

Actions

- **Action 1.2.5:** Maintain existing paddling routes.
- **Action 1.2.6:** Maintain the existing boat dock.
- **Action 1.2.11:** Continue to provide existing hunting opportunities at the current level, unless that level is determined to be incompatible with the mission and goals of the Preserve.
- **Action 1.3.5:** Participate in discussions with Sacramento County and other Preserve Partners regarding the potential for future regional trails, including one to connect Stone Lakes Refuge to the Preserve.

East Bay Regional Park District Master Plan

The EBRPD provides and manages the regional parks in Alameda and Contra Costa counties, including Browns Island Regional Preserve, Antioch Regional Shoreline, Big Break Regional Shoreline, and the San Francisco Bay Water Trail. Partially completed regional trails in the Delta include segments of the Mokelumne Coast to Crest Trail and Delta/De Anza Trail. EBRPD's Master

Plan 1997 (East Bay Regional Park District 1996) sets priorities for the next 10 years and provides policies and guidelines for resource conservation, management, interpretation, public access, and recreation. Policies specifically strive to increase public access to the Delta shoreline for boating and fishing.

The 2007 master plan map (East Bay Regional Park District 2007) amended the master plan and identified areas for potential EBRPD parklands, including Delta access (on Orwood Tract), Delta recreation (on Jersey Island), and Pittsburg/Antioch regional shorelines. Potential regional trails include the Great California Delta Trail, Delta Island Shoreline Trail, the Delta Trail Extension and segments along Big Break Shoreline, the Southern Pacific Railroad, Marsh Creek Trail to Discovery Bay, and Mokelumne to Discovery Bay.

The master plan includes the following policies regarding recreation on EBRPD lands.

- The District will manage riparian and other wetland environments and their buffer zones to preserve and enhance the natural and beneficial values of these important resources and to prevent the destruction, loss, or degradation of habitat. The District will participate in the preservation, restoration, and management of riparian and wetland areas of regional significance, and will not initiate any action that could result in a net decrease in park wetlands. The District will encourage public access to the Bay/Delta shoreline, but will control access to riparian and wetland areas, when necessary, to protect natural resources.
- The District will continue to plan, develop and provide a regional system of aquatic facilities at parks that can support these activities. The District will strive to improve public access to lakes and to the San Francisco Bay and Delta shorelines for boating and fishing, and will increase access to swimming beaches.
- The District will acquire property in accordance with the Master Plan 1997, giving careful consideration to operating and program needs, the District's financial position, timing factors that affect the sale of the property, and opportunities provided under Measure AA and any subsequent funding measures.
- Regional Trails will connect regional parks or trails to each other; to parks and trails of other agencies; or to areas of unusual scenic beauty, vista points, San Francisco Bay, Delta or lake shoreline, natural or historic resources, or similar areas of regional significance. Regional Trails may also connect regional parks and trails to important destinations such as transit centers, schools, colleges, civic centers, other major institutions, employment centers, large commercial complexes, or residential areas. A regional water trail may provide a water connection with launching and landing sites for small watercraft to points along the San Francisco Bay shoreline and/or the Sacramento/San Joaquin River and Delta.
- To protect park resources while providing for regional recreational use and access, the District will prepare plans (Land Use Plans or System-wide Plans) that describe the various levels of resource protection and recreational intensity in the parks, development projects, and land management strategies for trails and parks. Planning efforts will include consideration of proposals from the public. The District will strive to create and maintain up-to date information about each of its parks. Significant changes or amendments to adopted plans will require further public comment and Board action.
- Complete key park and trail projects in the eastern part of the District to serve newly annexed areas and anticipate urban growth. Where possible, enhance facilities, services, and programs provided by other agencies.

- Complete the missing sections of the Bay Area Ridge Trail and the San Francisco Bay Trail.

Suisun Marsh Protection Plan

The Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974 called for the San Francisco Bay Conservation and Development Commission and DFG to prepare the Suisun Marsh Protection Plan (San Francisco Bay Conservation and Development Commission 1976). Adopted in 1976, the plan includes findings and policies for a number of resources, as well as a plan implementation program. The following policies (as amended in November 2007) address recreation and public access.

- **Policy 1:** Continued recreational use of privately-owned managed wetlands should be encouraged. Additional land should be acquired within the Suisun Marsh to provide for increased public recreational use and additional refuge areas for waterfowl during the hunting season. Acquisition priority should be given to those lands not now operated as managed wetlands.
- **Policy 2:** Land should also be purchased for public recreation and access to the Marsh for such uses as fishing boat launching and nature study. These areas should be located on the outer portions of the Marsh near the population centers and easily accessible from existing roads. Improvements for public use should be consistent with protection of wildlife resources.
- **Policy 3:** Public agencies acquiring land in the marsh for public access and recreational use should provide for a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking, and nature study.
- **Policy 4:** Agencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintained litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.
- **Policy 5:** Recreational activities that could result in adverse impacts to the environment or aesthetic qualities of the Suisun Marsh should not be permitted. Levels of use should also be monitored to insure that their intensity is compatible with other recreation activities and with protection of the Marsh environment. For example, boat speeds and excessive noise should be controlled and activities such as water skiing and naval training exercises should be kept at an acceptable level.

15.3 Environmental Consequences

This section describes the potential effects on recreation that would result from project construction, operation, and maintenance, and describes on a programmatic level the effects that would result from proposed restoration activities.

15.3.1 Methods for Analysis

15.3.1.1 Assessment Methods

[*Note to Reviewers: the geographic scope and CALSIM results are continuing to be verified and under development.*]

Conservation Measure 1

The assessment methods for Conservation Measure 1 (CM1) evaluate effects on recreation resources in the near-term (2020) and early long-term (2025) resulting from the construction, operation, and maintenance of facilities as they affect the following.

- Recreational activities (water-dependent, water-enhanced, and land-based) and opportunities in the Delta Region that are near action alternative facilities.
- Water-dependent (e.g., boating and swimming) and water-enhanced recreation opportunities at major north-of-Delta reservoirs and major SWP/CVP south-of-Delta reservoirs.

Effects on recreation were assessed by identifying recreation areas that fall within the right-of-way construction alignment, each alternative's conveyance planning area (CPA), and extending 1,000 feet from the CPA for effects on access or potential degradation of the recreation setting. Effects on recreation that could occur during construction of action alternative facilities were evaluated qualitatively. Generally, construction activities could result in a short-term loss of recreation opportunities by disrupting use of recreation areas or facilities. A long-term effect could occur if a recreation opportunity is eliminated as a result of locating a water conveyance structure(s) on or adjacent to a recreation area or facility.

Operating the project alternatives could result in changes in reservoir storage and river flows in the Plan Area. The resulting change in reservoir storage could change the frequency and duration that lake levels are within acceptable ranges or above the minimum level necessary to conduct recreational activities. The evaluation of effects on water-dependent recreation was conducted by comparing the CALSIM hydrological modeling results for each alternative with the reservoir storage recreation thresholds. Key opportunity thresholds used in this analysis are shown in Table 15-8.

Effects on recreation that could occur as a result of maintenance activities were also evaluated qualitatively. Maintenance activities could result in short-term loss of recreation opportunities by disrupting use of recreation areas or facilities.

Table 15-8. Recreation Opportunity Thresholds for Important North-of-Delta and South-of-Delta Recreation Resources

Water Resource	Elevation when Full	Recreation Opportunity Thresholds[a]
Folsom Lake	466 msl	360 msl—last boat ramp out of operation 400 msl—limited surface area (boating constrained) 405 msl—marina closes 430 msl—decline in shoreline activities
Shasta Lake	1,067 msl	>952msl—at least one boat ramp available on each arm 1,017 msl—limited surface area (boating constrained)
Trinity Lake	2,370 msl	2,170 msl—last boat ramp out of operation 2,320 msl—limited surface area (boating constrained)
Lake Oroville	900 msl	680 msl—last boat ramp out of operation 700 msl—limited surface area 850 msl—access limited

Water Resource	Elevation when Full	Recreation Opportunity Thresholds[a]
Lower American River	–	SWRCB thresholds: 1,500–2,000 cfs—boating minimum range 3,000–6,000 cfs—boating optimal range 1,250–5,000 cfs—swimming CVPIA thresholds: 1,750–3,000 cfs—boating optimal range 1,750 cfs—minimum boating flows 1,500 cfs—optimal swimming flows Hodge Decision: 1,750 cfs—minimum summer recreation flows
Sacramento River	–	2,500–12,000 cfs—boating optimal range
Feather River	–	<2,500 cfs—minimum rafting/boating elevation >5,000 cfs—optimal rafting/boating elevation
San Luis Reservoir	225 msl	340 msl—last boat ramp out of operation
Castaic Lake	1,515 msl	1,325 msl—last boat ramp out of operation 1,280 msl—minimum operating surface elevation
Lake Perris	1,590 msl	1,535 msl—last boat ramp out of operation 1,564 msl—marina closes 1,540 msl—minimum operating surface area
Pyramid Lake	2,579 msl	–
Silverwood Lake	3,355 msl	–

Sources: California State Water Resources Control Board 1988 (State Water Board opportunity thresholds for the Lower American River); U.S. Forest Service 2001 (boat ramp opportunity thresholds for Shasta Reservoir); U.S. Fish and Wildlife Service et al. 1999 (boat ramp opportunity thresholds for Trinity Lake); *Environmental Defense Fund v. EBMUD* 1990 (Hodge Decision; Bureau of Reclamation 1997 [all other opportunities]); DWR pers. comm.

[a] Thresholds are measured in feet above mean sea level (msl) for reservoirs and in cubic feet per second (cfs) for rivers.

Conservation Measures 2 through 17

The assessment methods for CM2–CM17 programmatically evaluate effects of restoration and enhancement conservation measures on recreation in the near-term (2020), early long-term (2025), and late long-term (2060). Near-term (2020) effects would result from construction activities to create habitat. Early long-term and late long-term effects would result from the continual growth and establishment of those habitats. Effects were considered by Conservation Zone (CZ) and Restoration Opportunity Areas (ROA) for the following.

- Recreational activities (water-dependent, water-enhanced, and land-based) and opportunities in the Delta Region near habitat restoration sites.
- Fishing activities and opportunities in the Delta region.

15.3.2 Determination of Adverse Effects

The criteria used for determining the significance of an effect on recreational resources are based on Appendix G of the State California Environmental Quality Act (CEQA) Guidelines (Environmental Checklist) and professional standards and practices. Effects on both water-dependent and water-

enhanced recreation opportunities may be considered significant if an alternative would result in any one of the following conditions.

- Cause a change in river flows or lake elevations that would result in substantial changes to existing recreational opportunities.
- Locate project facilities that would result in a substantial long-term disruption or reduction of use of any institutionally recognized recreational activities.
- Cause an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Cause the amount of area available for a particular type of recreation to be reduced.
- Result in substantial inconsistency with local recreation plans and policies.

15.3.3 Effects Assumptions

Construction activities adjacent to or within recreation areas could last from 5 to 7 years.

CALSIM modeling results indicate that effects, if any to river flows are so minor as to have no effect and are not discussed further.

15.3.3.1 No Action Alternative

The No Action Alternative considers changes in recreation that would occur due to the continuation of existing plans, policies, and operations. The No Action Alternative includes projects and programs with defined management and/or operational plans, including facilities under construction as of February 13, 2009, because those actions would be consistent with the continuation of existing management direction or level of management for plans, policies, and operations by the National Environmental Policy Act (NEPA) lead agencies and other agencies. The No Action Alternative assumptions also include projects and programs that received approvals and permits in 2009 to remain consistent with existing management direction. The No Action Alternative would result in the following effects on recreation.

Delta Water-Dependent Recreation

Temporary effects on water-dependent recreation include restrictions on boat passage and navigation during construction and operation of in-water projects. Future projects include the North Bay Aqueduct Alternative Intake Project and Sacramento Deep Water Ship Channel Dredging Program. These projects could adversely affect water-dependent recreation by restricting boating access and passage during the construction phases by placing structures and construction equipment within Delta waterways. Ongoing projects and programs include the operation of the Delta Cross Channel, the South Delta Temporary Barriers Program, and the Georgiana Slough Non-Physical Fish Screen. These projects and programs, when in place would also adversely affect water-dependent recreation by hindering boat passage and access to portions of the Delta's waterways.

Localized effects on water-dependent recreation such as fishing may occur during construction or installation phases of these projects as a result of loss of access to the water resources. Other effects on fishing may occur as a result of changes in sport fish abundance not directly attributable to the construction or operation of in-Delta facilities. Environmental conditions occurring within upstream

rivers and reservoirs, the Delta, and ocean may adversely affect the abundance of sport-fish harvested within the Delta.

Other ongoing resources management plans may benefit water-dependent recreation by controlling nonnative aquatic vegetation such as *egeria densa* and water hyacinth. These programs help maintain access to some Delta waterways that could otherwise be inaccessible because of the presence of dense aquatic vegetation.

DPR has prepared the *Recreational Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* that includes recommendations for improvements and expansion of four Delta state recreation areas and six other state parks on the edge of the Delta and Suisun Marsh. While funding is not yet identified for implementation, any future implementation would include improvements to existing land- and water-based recreational activities in the Delta (California Department of Parks and Recreation 2011).

Delta Land-Based Recreation

Ongoing restoration and environmental enhancement projects may benefit non-consumptive recreation within the Delta. These projects include recently completed, ongoing, or planned restoration and enhancement projects within the North Delta, Lower Yolo Bypass, and Suisun Marsh and implementation of land management plans for Stone Lakes NWR, Yolo Bypass, and Lower Sherman Island. These restoration projects may enhance wildlife viewing, non-motorized boating, and other passive recreation opportunities within the Delta by increasing wildlife habitat and public access. The implementation of land management plans for public lands provide direction for recreation and may also lead to the installation of additional recreation facilities that provide either new or enhanced opportunities for recreation and an enhanced recreation setting. Long-term adverse effects on recreation opportunities and experiences also include those related to sea level rise and the resulting inundation of many water-based facilities in the Delta.

Other land-based recreation activities are expected to increase in response to changes in local and regional demand. These activities include agritourism, wine tasting, historic and cultural tourism, bicycling, and driving for pleasure (Delta Stewardship Council 2011).

Recreation Upstream of the Delta

Beneficial effects include those on recreation opportunities and experiences from probable future projects and programs such as the hatchery and stocking programs; the Red Bluff Diversion Dam Fish Passage Project; the Battle Creek Salmon and Steelhead Restoration Project; the American Basin Fish Screen and Habitat Improvement Project; stormwater management programs; and implementation of the San Joaquin River Restoration Program. These programs could enhance recreation by increasing the abundance of sport fish. Conditions occurring within upstream rivers and reservoirs (e.g., river flows, reservoir storage, river and reservoir water temperature, water quality) can also affect the abundance of sport fish and conditions suitable for river and reservoir boating or other water-dependent recreation activities. Lower reservoir storage and river flows and reduced water quality conditions typically result in an adverse effect on recreation opportunities.

As described in Chapter 3, *Description of Alternatives*, many of the ongoing programs include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA, the federal Endangered Species Act, and other federal laws and regulations. Future state and local actions would be required to comply

with CEQA, the California Endangered Species Act, and other state and local laws and regulations. Compliance and permit requirements would be implemented on a case-by-case basis.

15.3.3.2 Alternative 1A—Dual Conveyance with Tunnel and Intakes 1–5

Construction of Structural/Physical Components

Table 15-9 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of CPA limits (Figure 15-7 to come). Specific effects are discussed below. See Chapter 17, *Visual Resources*, and Chapter 23, *Noise*, for additional visual- and noise-related effects on recreationists, respectively.

Table 15-9. Recreation Sites Potentially Affected by Construction of Alternative 1A

Sites in the Construction Right-of-Way	Sites in the CPA	Sites within 1,000 feet of the CPA Limits
	Clarksburg Fishing Access	Clarksburg Marina
	Stone Lakes NWR (Private Lands)	Stone Lakes NWR (Public Use)
	Georgiana Slough Fishing Access	Ko Ket Resort
	Venice Island Duck Club	Bullfrog Landing (Marina)
	Clifton Court Forebay	
	Lazy M Marina	
	Rivers End Marina	

Source: Compiled by DHCCP in 2010.
Notes:
No public recreation sites or use areas are located in the right-of-way or within 1,000 feet of the right-of-way.
CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The Alternative 1A construction footprint for five intake facilities, tunnels, and associated conveyance facilities does not conflict with any existing public use recreation sites, including parks, marinas, or other designated areas; therefore, there would be no direct effects on recreation opportunities from displacement of facilities by this alternative. There would be no direct adverse effects that would displace existing public or private recreation facilities.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Seven recreation sites are in the Alternative 1A CPA and an additional four are within the 1,000-foot zone extending beyond the CPA limits. The effects that have the potential to occur at each recreation facility site are discussed below. Potential indirect effects include disrupted access, noise generated

during construction, and temporary changes in the visual character of the area surrounding the recreation sites.

Clarksburg Fishing Access

The Clarksburg Fishing Access site is on the right bank of the Sacramento River about 2,750 feet upstream and across the river from the proposed Intake 3 site. A temporary access road and temporary work area would be located directly across the river fishing access siteAccess to the Clarksburg Fishing Access would be maintained using County Road E9; access is not expected to be a concern because most of the construction activity would occur on the east side of the Sacramento River. On-water access to the fishing site, as well as use of the boat ramp, would not be affected by construction activities occurring downstream, upstream, or across the river.

Because of the bend in the Sacramento River, it is unlikely that Intake 3 would be visible from the fishing access site. However, work areas and a temporary access road may be visible from the fishing access site. Intake Alt 3 would lie directly across from the Clarksburg boatramp. This visibility would negatively affect the recreation setting for the fishing access. In addition, construction noise from the intake facility, access road, and work area could negatively affect the recreation setting and thus could affect the recreation experience of visitors participating in picnicking, boat launching, or fishing at the site.

Stone Lakes National Wildlife Refuge

A portion of the CPA falls within the boundary of the Stone Lakes NWR, however these lands are privately owned . No public recreation facilities are located in or planned for this area of the NWR (U.S. Fish and Wildlife Service 2007). The part of Stone Lakes NWR located within 1,000 feet of the CPA boundary is part of the core public use areas and includes the Beach Lake and North Stone Lake Units of the NWR.

Because of the proximity of the alignment and associated construction work areas and borrow/spoil areas, there could be effects on wildlife viewing and environmental education opportunities within the Stone Lakes NWR, depending on the timing of construction. If construction activities were to degrade wildlife habitat value in the NWR, then there would be temporary effects on wildlife viewing and some environmental education opportunities that depend on the presence of wildlife. Hiking, interpretation, and some environmental education opportunities would still be feasible within the NWR; however, the recreation experience of refuge visitors may be affected by construction activities. Construction noise and the resulting reduced opportunities for wildlife viewing could result in adverse effects on the recreation setting and recreation experience of visitors.

Georgiana Slough Fishing Access

The Georgiana Slough Fishing Access is located directly east of the Alternative 1A tunnel alignment. A work area and temporary access road are located on the opposite bank of the slough, approximately ___ feet upstream. Access to the fishing site would be maintained using Andrus Island Road or a detour. On-water access to the site, as well as use of the boat ramp, would not be affected by activities downstream, upstream, or across the river. A work area is located across the slough and would not be visible from the fishing access; therefore, it would have no visual effect on the recreation opportunities. . Construction noise could adversely affect the recreation setting in and degrade the recreation experience of visitors.

Venice Island Duck Club

Venice Island Duck Club is a private hunting facility on Venice Island between Potato Slough and the San Joaquin River, west of the Alternative 1A alignment and outside of the CPA. A access shaft to the tunnel access and a work area are located on Venice Island approximately 1 mile to the northwest of the duck club. Access to the duck club would be maintained using Venice Island Road. Construction noise could affect hunting opportunities, depending on the timing of tunnel construction. Construction occurring during waterfowl hunting season (October through January) could adversely affect recreational hunting at the site to the degree that use is degraded, depending on the volume of noise and its effect on waterfowl.

Clifton Court Forebay

Clifton Court Forebay offers public fishing and hunting access from Lindeman Road on the west side of the forebay. Most fishing and hunting use at the forebay likely occurs at this location, although some visitors walk or ride a bike around the forebay to reach other fishing and hunting locations. Access to the site would be maintained using Clifton Court Road or a detour. Construction noise could affect fishing opportunities by making the site less desirable for fishing; the opportunities for visitors who use the southern part of the forebay would be most affected because of its proximity to the proposed construction area. Construction noise also could affect hunting opportunities at Clifton Court Forebay, depending on the timing of the tunnel construction. Construction during waterfowl hunting season would adversely affect recreational hunting at this site to the degree that use is temporarily degraded, depending on the volume of noise and its effect on waterfowl.

The construction areas for the new facilities would likely not be visible from the main public forebay access point; however, visitors at the southern part of the forebay would be able to see the construction areas, which could affect the recreation setting and detract from their recreation experiences. Construction noise and the resulting reduced opportunities for fishing or hunting could also adversely affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience of users.

Lazy M Marina

Lazy M Marina is a private marina located on Italian Slough west of Clifton Court Forebay. The marina is located northwest of the new Byron Tract Forebay, borrow/spoil area, temporary work roads and control structures on the south side of the forebay. Vehicular access to the site would be maintained using Clifton Court Road or a detour. In addition, on-water access to the marina would be maintained, and use of the marina's boating facilities, including the boat ramp, would not be affected by construction. Although boating opportunities would still be available at the marina during construction, the recreation experiences of marina users may be adversely affected by construction activities.

Construction areas for the new facilities would likely not be visible from the marina and would not affect the visual recreation setting at the marina. Construction noise could adversely affect the recreation setting for users of the marina, including visitors who launch at the marina or who moor their boat at the marina, and detract from their recreation experiences.

Rivers End Marina

Rivers End Marina is a private marina located on Old River south of Clifton Court Forebay near the town of Byron. Dry boat and RV storage at the marina would not be affected by construction

activities. Vehicular access to the site would be maintained using Clifton Court Road or a detour. In addition, on-water access to the marina would be maintained, and use of the marina's boating facilities, including the launch ramp, would not be affected by construction. Boating opportunities would still be available at the marina during construction; however, the recreation experiences of marina users may be affected by construction activities.

Rivers End is located just south of the southern embankment for the new Byron Tract Forebay on the south side of Clifton Court Forebay and upstream (east) of a proposed control structure and temporary work area. Marina users would likely be unable to see either the control structure or the proposed forebay embankment because existing levees and other structures within the sight line would block views of these new facilities; therefore, the visual recreation setting at the marina would not be affected. Construction noise could adversely affect the recreation setting for users of the marina, including visitors who launch at the marina or who moor their boat at the marina, and detract from their recreation experiences.

The Clarksburg Marina

Clarksburg Marina is a small marina on the Sacramento River with eight berths. It is located within 500 feet of the CPA boundary. The marina is located approximately 1,000 feet southwest, and on the opposite side of the river, of the terminus of a temporary access road leading to Intake 3. On-water and vehicular access to the marina and use of the marina's boating facilities would not be affected by land-based construction of the temporary access road on the other side of the river. Boating opportunities would still be feasible at the marina during construction of the temporary access road across the river; however, the recreation experience of marina users may be adversely affected by construction activities. Construction noise could adversely affect the recreation setting for users of the marina, including visitors who launch at the marina or who moor their boat at the marina, and detract from their recreation experiences.

Ko Ket Resort

Ko Ket Resort is a camping facility on the Sacramento River south of Walnut Grove on Isleton Road and is located within 1,000 feet of the CPA. The resort has 40 campsites, a ramp, fishing access, a guest dock, and pump-out facilities. Temporary work and spoil/borrow areas are approximately ¾ mile to 1 mile to the east and southeast of the resort. Vehicular access to the resort would be maintained using Isleton Road, although there may be additional construction truck traffic on Isleton Road that results in delays. On-water access to the resort and use of the resort's launch ramp and pump-out facilities would not be affected by construction activities. Camping and fishing opportunities would still be feasible at the resort during construction; however, the recreation experience of resort visitors may be adversely affected by construction activities Construction noise could adversely affect the recreation setting for users of the resort, including visitors who launch at the marina or who moor their boat at the marina, and detract from their recreation experiences.

Bullfrog Landing Marina

Containing 43 berths, the Bullfrog Landing marina is located on Middle River across from the CPA boundary surrounding the tunnel/pipeline alignment across Bacon Island. The marina is located more than 1,000 feet northeast of the terminus of a permanent access road to a ventilation/access shaft for the tunnel/pipeline. Vehicular access to the marina would be maintained using West Bacon Island Road or a detour, although there may be additional truck traffic on West Bacon Island Road. On-water access to the marina and use of the marina's boating facilities would not be affected by

tunnel/pipeline construction activities. Boating opportunities would still be feasible at the marina during construction of the tunnel/pipeline and permanent access road. Due to the distance from the marina to the terminus of the new road and the tunnel/pipeline alignment, it is likely that marina users would not hear or see construction activities. Marina visitors arriving from downstream, who would pass by construction of the new access road, may encounter construction noise, as would any anglers on W. Bacon Island Road between the marina and the railroad crossing. If additional traffic was estimated to be heavy on W. Bacon Island Road, it may result in temporary adverse effects to recreation opportunities and experiences as a result of additional noise and degradation of the recreation setting.

Construction of Alternative 1A intakes and water conveyance facilities will result in temporary effects related to disruption of recreational opportunities and experiences in the Delta Region during construction activities. Indirect effects on recreation experience may occur as a result of construction noise or negative visual effects associated with construction activities. Access and availability of all the facilities within the within the CPA will be maintained during construction activities. Construction noise and visual disturbances will be minimized by implementation of environmental commitments for Navigation Protection and Noise Management which will reduce these adverse effects. Although environmental commitments would be implemented to lessen the adverse effects of construction noise on the recreation experience, some recreationists may still cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location because of construction activities. Users who choose to continue to recreate in or near construction areas could have an adverse effect on their recreation experience. The Delta offers many alternative recreational opportunities for water-based, water-enhanced, and land-based recreation, all of which would continue to be available for recreationists. Therefore, direct and indirect effects related to temporary disruption of existing recreational facilities would be adverse.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational navigation as a result of constructing the proposed water conveyance facility

Changes to boat passage and navigation on the Sacramento River, including direct effects on boat passage related to the creation of obstructions and associated boat traffic delays, would occur during construction of Alternative 1A. Construction of the five intakes would involve installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Temporary barge unloading facilities would also affect navigation for recreationists.

Intakes

The proposed intakes are spaced along an 8.5-mile reach of the river, from 1.5 miles upstream of Clarksburg to 1.5 miles upstream of Courtland. During the BDCP Boat Traffic Study, boat traffic

volume in this area was found to be low, with weekend traffic volumes of fewer than 100 boats per day and 15–25 boats per hour at peak-use times. Additional detail on boat traffic volume and other boat traffic characteristics at this location is available in Appendix __.

Although boats would be unable to use the portion of the waterway where construction was occurring, the river in the vicinity of the intake construction sites would remain open to boat passage at all times. The river is approximately 500–700 feet wide near the proposed intakes. Most of this channel width would remain open to boat passage, providing ample room for the boat traffic observed to occur in the area to pass without difficulty and minimizing possible traffic congestion.

Temporary in-water construction zone restrictions would include a speed-restricted zone extending upstream and downstream of construction within the river to reduce wake and maintain a safe work area in the vicinity of the construction activities. The extent of the speed-restricted zone has not been determined. Within the speed-restricted zones around the intake areas, high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated.

Studies conducted to date showed minimal use of the affected Sacramento River reach for waterskiing, wakeboarding, tubing, or fishing. Observations showed that most boat traffic was passing through the reach and not actively participating in a recreation activity like water sports or fishing.

Direct adverse effects on boat passage and navigation on the Sacramento River would result from construction of the intakes. Effects would include obstruction and delays to boat passage and navigation as a result of channel obstructions to compliance with temporary speed zones. However, boat passage volume along the corridor of the Sacramento River where intakes are proposed is low. Water-based recreational activities such as water skiing, wakeboarding, tubing, or fishing are also low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones. Implementation of environmental commitments for Navigation Protection and Noise Management along with Mitigation Measure REC-1 would reduce these effects. Effects on temporary alteration of recreational navigation are considered adverse.

Temporary Barge Unloading Facilities

Alternative 1A includes six barge unloading facilities to be built on or near the tunnel alignment at riverbank locations about 5–6 miles apart (except on Woodward Canal). The facilities would be built on the following waterways: Sacramento River, North Fork Mokelumne River, San Joaquin River, Middle River, and Woodward Canal (which would have two facilities). The facilities would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. All barge facilities would have temporary in-water construction zone restrictions including a speed-restricted zone extending upstream and downstream of construction within the waterway to reduce wake and maintain a safe work area in the vicinity of the construction activities. The extent of the speed-restricted zone has not been determined. Within the speed-restricted zones high-speed recreation (e.g., waterskiing, wakeboarding, and tubing) would effectively be eliminated. Specific effects that could occur at each barge unloading facility site are discussed below. All effects would be temporary, with each one lasting approximately 5 years.

Sacramento River

The Sacramento River barge unloading facility would be about 1 mile downstream from Georgiana Slough and Walnut Grove and would occupy about 800 feet of the east riverbank. The river channel is relatively narrow at this location (about 300 feet wide, as compared to 500–700 feet wide at the intake locations). Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Peak boat traffic volume may be high at this location. Because boat traffic would be confined to a limited portion of the channel, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

North Fork Mokelumne River

The North Fork Mokelumne River barge unloading facility would be about 3 miles upstream (northeast) of the junction with the South Fork Mokelumne River and would occupy about 2,000 feet of the west riverbank. The river channel is about 300 feet wide at this location. Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Although specific data are not available, boat traffic volume is expected to be low to moderate at this location, as was observed during the BDCP Boat Traffic Study on Georgiana Slough. Although this waterway connects the Walnut Grove area with the lower Mokelumne River and San Joaquin River, there are no boating facilities or recreation sites on the river itself, and the nearest marinas are about 3 miles away. Therefore, although boat traffic would be confined to a limited portion of the channel, increases in boat traffic congestion would likely be minor. The North Fork Mokelumne River in the vicinity of the barge unloading facility is a known location for waterskiing and wakeboarding.

San Joaquin River

The San Joaquin River barge unloading facility would be on the south side of Venice Island, on a wide bend in the river east of the Deep Water Ship Channel, and would occupy about 2,000 feet of the north riverbank. The river channel is more than 1,100 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain, and there would be little effect on boat passage. Boats using the ship channel could avoid the barge unloading facility entirely.

Middle River

The Middle River barge unloading facility would be on the east side of Bacon Island and would occupy about 1,000 feet of the west riverbank, about 2 miles south of Connection Slough. The river channel is about 400 feet wide at this location. Therefore, the barge facility and barge operations at this location could occupy a substantial portion of the river, constricting boat passage. Peak boat traffic volume may be high at this location. Because boat traffic would be confined to a limited portion of the channel, increased boat traffic congestion could occur during peak use times (primarily summer weekends). However, boaters would also have the option of bypassing the barge facility by making a slight detour to the east, around the opposite (east) side of Mildred Island, using Empire Cut and Lotham Slough to travel north or south through this area of the Delta. This available detour, coupled with signage and information outreach would likely minimize congestion and delay at this barge facility site.

Woodward Canal

The two Woodward Canal barge unloading facilities would be on the north and south sides of the canal, on Woodward Island and Victoria Island, respectively, and would occupy about 1,000 feet of the canal banks, about 0.5–0.75 mile east of Old River. The canal is about 350 feet wide at this location. Accounting for the potential for both barge facilities to be built and in operation at the same time, the barge facilities and barge operations at this location would occupy the entire or nearly the entire canal, constricting or preventing boat passage. Peak boat traffic volume is likely high at this location; therefore, if boat passage continued, increased boat traffic congestion could occur during peak use (primarily summer weekends) because boat traffic would be confined to a limited portion of the channel. The Woodward Canal in the vicinity of the barge unloading facilities is a known location for waterskiing and wakeboarding.

Construction of temporary barge unloading facilities would result in adverse effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary partial channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding, and tubing occur, recreation opportunities in the vicinity of the barge unloading facilities would be eliminated during construction. These effects would be reduced with the implementation of environmental commitments for Navigation Protection and Noise Management, and Mitigation Measure REC-1. Nonetheless, these effects would still be adverse.

CEQA Conclusion: Effects on boat passage and navigation in the Delta Region would result from the construction of the intakes and temporary barge unloading facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge unloading facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during construction. These effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less than significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Before construction activities begin, public information regarding the construction of the project, informing boaters of the location of the construction sites and no-wake zones and providing the construction schedule for each site, will be posted at Delta marinas and public launch ramps.

A waterway traffic control plan will be prepared to ensure safe and efficient vessel navigation during construction in waterways. The plan will identify vessel traffic control measures to minimize congestion and navigation hazards to the extent feasible. Construction areas in the waterway will be barricaded or guarded by readily visible gates or other effective means to warn boaters of their presence and restrict access. Warning devices and signage will be consistent with the California Uniform State Waterway Marking System and effective during non-daylight hours and periods of dense fog.

Where temporary channel closure is necessary, a temporary channel closure plan willbe developed. The waterway closure plan will identify alternate detour routing and procedures for notifying boaters of the temporary closure, including contacting the U.S. Coast Guard, boating organizations, marinas, county parks departments, and DPR, where applicable.

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects relating to recreational fishing will be determined after completion of the fisheries impact analysis.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to 7 years at each facility. [*Note: specifics about Clarksburg and Georgiana Slough access will be included*]

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

The peak recreation season is May to September. Reservoirs are generally at maximum storage volume and surface water elevation in May and decline over the course of the summer through September. This analysis compares the results of the CALSIM end-of-September reservoir water surface elevations because typically there are more instances in which reservoir elevations fall below key recreation thresholds (i.e., number of years out of the 82 simulated when the end-of-month storage is less than the recreation elevation threshold). Under these conditions, the overall usable reservoir area is reduced and previously submerged islands or shoals become exposed affecting boating safety. In addition, shoreline recreation becomes degraded. For each reservoir, a recreation threshold representing severely constrained boating conditions is used for the comparison of the no action to Alternative 1A conditions.

Operation of Alternative 1A would result in small changes in the frequency with which the end of September reservoir levels at Trinity Lake, Shasta Lake, Lake Oroville, Folsom Lake, and San Luis Reservoir would fall below levels identified as important water-dependent recreation thresholds. As

shown in Table 15-10, future no action conditions (i.e., climate change baseline scenarios) under both 2025 and 2060 conditions would have more years in which reservoir levels fall below the recreation threshold relative to the near term no action condition. For 2025, the reservoirs would fall below the thresholds from 2 to 10 additional years than under near term no action conditions, and for 2060, from 13 to 24 additional years than under near term no action conditions.

However, in the 2025 and 2060 comparisons of Alternative 1 operations to no action conditions, in all instances the CALSIM modeling results indicate that reservoir levels under Alternative 1A operations would either not change or would fall below the individual index reservoir thresholds less frequently than under no action conditions. These changes in reservoir elevations would be considered beneficial effects of Alternative 1 operations and would not adversely affect water-dependent or water-enhanced recreation at these reservoirs. These conditions represent improved recreation conditions under operation of Alternative 1 because there would be fewer years in which reservoir levels would fall below the recreation thresholds thus providing more years with better boating opportunities, when compared to future no action conditions.

CEQA Conclusion: This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs is less than significant. No mitigation is required.

Table 15-10. Number of Years End-of-September Reservoir Levels are Below Recreation Thresholds

	Near Term	2025		2060	
Recreation Threshold	No Action	No Action	Alt 1 (change)	No Action	Alt 1A (change)
Trinity Lake					
2,270 msl—boating severely constrained	27	32	30 (-2)	43	41 (-2)
Shasta Lake					
<967 msl—boating severely constrained	16	22	19 (-3)	29	27 (-2)
Lake Oroville					
700 msl—limited surface area, boating severely constrained	34	44	29 (-15)	58	41 (-17)
Folsom Lake					
405 msl—marina closes, recreation substantially impaired	29	33	31 (-2)	50	38 (-12)
San Luis Reservoir					
395 msl—boating severely constrained	29	31	31 (0)	43	35 (-8)

The values represent the number of years for which reservoir elevation would fall below the recreation threshold based on the CALSIM 82-year modeling period. Assumptions for CALSIM modeling were developed specifically for the BDCP project.

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Intake maintenance, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment could have a minor effect on boat passage and navigation in the Sacramento River. Major repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reducing opportunities for waterskiing, wakeboarding, or tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment. In addition, the areas around the intakes are not commonly used for waterskiing, wakeboarding, or tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in periodic temporary but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation.

CEQA Conclusion: Effects on recreation resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant impacts on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Intake maintenance impacts on recreation are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Conveyance facility maintenance may include painting, landscaping, equipment replacement, and mechanical repairs that would not affect recreation opportunities. Maintenance activities for these facilities would be conducted within the facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to recreational opportunities. Therefore, there is no impact.

Conservation Components

[*Note to reviewers: the number and content of measures related to conservation activities and the reduction of species-level stressors has not been finalized. This section will be updated to reflect new or updated measures that could impact recreational resources in the Delta Region.*]

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

Under CM2, Fremont Weir and Yolo Bypass would be physically modified and operated to improve fish rearing and spawning habitat, increase frequency of floodplain inundation in Yolo Bypass, and improve fish passage into Putah Creek through Yolo Bypass and past Fremont and Sacramento

Weirs. The modifications would increase frequency and duration of inundation of the Yolo Bypass between December 1 and March 31, with occasional extensions to May 15. Noise and the physical footprint associated with these physical modifications would temporarily inhibit the quality and access of fishing opportunities in the affected areas. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This modification in operations would increase onshore and boat fishing opportunities. This conservation measure was designed, in part, to improve habitat for covered fish species, including Chinook salmon, green and white sturgeon, and steelhead. Thus, to the extent that access is available to anglers, the fishing experience for sport species benefiting from this measure would improve based on hypothetical higher catch rates.

CM4 would provide for the restoration of 14,000 acres of freshwater and brackish tidal habitat in the near-term and up to 65,000 acres in the late long-term. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Tidal habitat restoration activities would lead to temporary decreases in boat and onshore fishing opportunities and quality due to the physical footprint, noise, odors, and other conditions created by site preparation and earthwork activities, including channel and bank modification in restoration areas. Tidal habitat restoration could permanently disrupt existing points of fishing access, eliminating recreational opportunities. Depending on the extent of recreational access granted to the public in new tidal habitat areas, however, this measure could also support expanded opportunity for shore-based and boat fishing. This conservation measure was designed, in part, to improve habitat for covered fish species, including Chinook salmon, green and white sturgeon, river and Pacific lamprey, and steelhead. CM4 would improve the fishing experience associated with these and other target species that benefit from restored tidal habitat.

Another guiding principle in the design of this measure is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. The recreational experience associated with fishing for these species would be reduced by this measure. On balance, however, it is anticipated that CM4 would have a minor positive effect on the fishing experience in the Delta Region. [*Note: discussion will be updated based on completion of fisheries section related to effects on striped bass*].

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the near-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle River channels. While temporary earthwork and site preparation measures would temporarily limit recreational access and interfere with the quality of fishing in restoration areas, this measure would result in an increase in boat fishing opportunities as a result of improvements in riparian habitat for a number of fish species and increased areas for boat navigation. Similar improvements may also exist for onshore fishing, though current points of access may be eliminated following implementation of restoration activities.

Within the first 40 years of Plan implementation, a total of 10,000 acres of seasonally inundated floodplain would be restored under Alternative 1A. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. These restoration measures would result in a further increase in onshore and boat fishing opportunities due to improvements in riparian habitat for fish; however, existing points of access may be modified or disrupted.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. At least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years.

CM6 would create benches on the outboard side of levees or create setback levees. Site preparation and earthwork associated with the construction of these areas and potential access restrictions would lead to temporary or permanent decreases in boat and onshore fishing quality and opportunities. However, CM6 was designed, in part, to improve habitat for covered fish species, including Chinook salmon, sturgeon, and steelhead. CM6 would improve the fishing experience associated with these and other target species that benefit from enhanced channel margin habitat. Another guiding principle in the design of this measure is the limitation of environmental conditions that favor nonnative predator fish species, including striped bass. The recreational experience associated with fishing for these species would be reduced by this measure. After 20 years of implementation, the BDCP would cumulatively enhance 10 miles of channel margin habitat. After 30 years, this measure would cumulatively enhance 20 miles of channel margin. This measure would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. On balance, it is anticipated that this measure would make a minor improvement to the fishing experience in the Delta Region.

CM7 would restore 400 acres of riparian habitatin the first 15 years and up to 5,000 acres within 30 years. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with CM4, CM5, and CM6. Restoration of riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic cover. Byyear 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. While construction activities associated with this component may temporarily or permanently restrict some access for anglers and create temporary conditions less favorable for fishing activities, this measure would improve fish habitat, leading to an enhanced fishing experience.

Under CM11 management plans for natural communities may be prepared for specific reserves or for multiple reserves within a specified geographic area. Management and enhancement actions would be implemented for the following natural communities: tidal aquatic and wetland, nontidal aquatic and wetland, riparian, grasslands and associated seasonal wetland, inland dune scrub, and agricultural lands and managed wetlands. Depending on the level of recreational access granted by management plans, this measure could increase or decrease opportunities for anglers within the Delta Region.

CM12 would minimize adverse effects of methylmercury on covered fish species, including white sturgeon and North American green sturgeon, and Sacramento splittail. This measure, if successful in reducing predation caused as a byproduct of methylmercury and improving fish health, would support an enhanced fishing experience for onshore and boat-based anglers.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. Site-specific conditions and the intended goal would dictate the specific method of removal. This measure is hypothesized to reduce predation mortality on covered species by reducing habitat for nonnative predatory fish and by increasing turbidity levels. Increased turbidity could also support delta and longfin smelt foraging abilities. Control of nonnative aquatic vegetation could also support access to additional rearing habitat for covered species, as well as increased food availability stemming from greater light levels for phytoplankton growth. Operations associated with vegetation control, particularly mechanical removal, would sporadically inhibit the quality of fishing. However, this measure would increase opportunities for onshore and boat fishing for species that are hampered by the presence of excessive nonnative vegetation. While these activities would reduce the fishing experience related to nonnative predatory fish, it is anticipated that the overall fishing experience would be enhanced.

CM14 would maintain dissolved oxygen levels above levels that impair covered fish species in the Stockton Deep Water Ship Channel when covered species are present. The BDCP would operate and maintain an oxygen aeration facility in the Stockton Deep Water Ship Channel to increase dissolved oxygen concentrations. By improving conditions for covered and game fish species, this measure would increase opportunities for onshore and boat fishing activities.

CM15 would reduce local effects of predators on covered fished species by conducting predator control in areas with high predator density. Predator *hot spots* will be identified and a control methods will be adopted including the removal of predator hiding spots, modification of channel geometry, targeted removal of predators, and other focused methods as dictated by site-specific conditions and the intended outcome or goal. Preference for which hot spots to address would be given to areas of high overlap with covered fish species, such as major migratory routes or spawning and rearing habitats. Predator control would decrease opportunities for onshore and boat fishing for species targeted for removal but would improve fishing opportunities for game species benefiting from reduced predation. If implementation includes a relaxation of regulations relating to bag limits or size restrictions associated with predatory species, this measure would carry a beneficial effect for anglers targeting these species, as well.

CM16 non-physical barriers at the junction of channels with low survival of outmigrating juvenile salmonids to deter fish from entering these channels. Non-physical barrier placement locations would include the Head of Old River, the Delta Cross Channel, and Georgiana Slough, and could possibly include Turner Cut, Columbia Cut, the Delta Mendota Canal intake, and Clifton Court Forebay. Installation of these barriers could temporarily limit fishing activities by creating noise and necessitating a physical footprint in existing fishing areas. This measure would decrease opportunities for onshore and boat fishing in some channels but would support overall native fish populations, resulting in a mixed, but minimal, effect on fishing opportunities across the Delta Region.

To address the illegal harvest of covered species across the Delta Region, CM17 would provide funds to hire and equip 22 additional staff, including 17 game wardens, to increase enforcement of fishing regulations. While this measure would curb illegal fishing activities and could result in greater regulatory burdens for law-abiding anglers as a result of increased inspection frequency, it would increase opportunities for a wider number of individuals through the enforcement of bag limits.

Implementing the conservation measures could result in an adverse effect on recreation by limiting access to fishing sites and disturbing fish habitat. The conservation measures are expected to result in a long-term beneficial effect on recreation by enhancing aquatic habitat and fish abundance

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; controlling aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

This assessment evaluates BDCP conservation measures related to habitat restoration and enhancement efforts and those designed to reduce other stressors, describing their potential effects on boating recreation in the Delta Region. Because the details surrounding the location and implementation of many of these measures are under development, these topics are addressed at a programmatic level.

Under CM2, Fremont Weir and Yolo Bypass would be physically modified and operated to improve rearing and spawning habitat, increase frequency of floodplain inundation in Yolo Bypass, and improve fish passage into Putah Creek through Yolo Bypass and past Fremont and Sacramento Weirs. Construction activities associated with the physical modifications for this measure would temporarily inhibit opportunities for boating in specific areas and could create, noise, odors, and visual changes that reduce the quality of the boating experience. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. This measure would marginally increase opportunities for boating-related activities as a result of longer inundation periods.

CM4 provides for the restoration of 14, 000 acres of freshwater and brackish tidal habitat in the near-term and up to 65,000 acres in the late long-term. In the early long-term, BDCP implementation would provide for the cumulative restoration of 25,000 acres of freshwater and brackish tidal habitat in the BDCP ROAs under all the action alternatives. In the late long-term, a cumulative 65,000 acres of freshwater and brackish tidal habitat throughout the ROAs would be restored. The extent of restored tidal habitat includes a contiguous habitat gradient encompassing restored shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. CM4 would lead to temporary decreases in boat-related recreation opportunities as a result of noise and other conditions associated with channel and bank modification activities in restoration areas. Following completion of restoration, CM4 would support expanded opportunities for boating in reconnected and dredged sloughs.

CM5 provides for restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the near-term and up to 10,000 acres in the late long-term. Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most

promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle River channels. These locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. While site preparation and earthwork activities associated with restoration may temporarily limit some boating access and lead to degraded conditions resulting from noise, odors, or visual effects, CM5 would result in an increase in boat-related recreation opportunities as a result of the seasonal expansion of navigable areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. At least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. CM6 would create benches on the outboard side of levees or create setback levees. Construction effects including noise, odors, and deteriorated visual conditions would temporarily alter the quality of the boating experience in enhancement areas. Where construction and completion of new benches would extend into existing waterways, navigable areas would be slightly reduced, which would permanently affect boating-related recreation. However, in cases where setback levees are constructed and channels are expanded, there would be a slight increase in boating opportunities.

Under CM11, management plans for natural communities may be prepared for specific reserves or for multiple reserves within a specified geographic area. Management and enhancement actions would be implemented for the following natural communities: tidal aquatic and wetland, nontidal aquatic and wetland, riparian, grasslands and associated seasonal wetland, inland dune scrub, and agricultural lands and managed wetlands. Depending on the level of recreational access granted by management plans, this measure could increase or decrease opportunities for boating within the Delta Region.

CM13 would control nonnative aquatic vegetation including Brazilian waterweed, water hyacinth, and other nonnative submerged and floating aquatic vegetation in BDCP tidal habitat restoration areas. While aquatic vegetation removal operations would temporarily restrict or obstruct navigation and reduce the quality of boating, overall the measure would increase boat passage and navigation and would improve the boating experience.

Under CM16, non-physical fish barriers would be placed at the Head of Old River, the Delta Cross Channel, and Georgiana Slough and could possibly include Turner Cut, Columbia Cut, the Delta Mendota Canal intake, and Clifton Court Forebay. Depending on their design, the construction and operation of these barriers could constrict boat passage or necessitate lower speed limits, diminishing the boating experience around the barriers.

Implementing the conservation measures could result in an adverse effect on recreation by limiting boating by reducing the extent of navigable waterways available to boaters. Once implemented, the conservation measures could benefit recreation by expanding the extent of navigable waterways available to boaters.

CEQA Conclusion: Channel modification and other activities associated with implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from construction, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience.

Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

This section considers upland recreational activities and potential effects from BDCP conservation measures geared toward the restoration and enhancement of habitat and the reduction of stressors on covered species. The activities under consideration include hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. The specific location and implementation activities associated with these measures are pending,; thus, these topics are addressed at a programmatic level. Future guidelines governing the level of recreational access allowed in restored habitat areas would influence the severity of the BDCP's effects on these activities.

Under CM2, Fremont Weir and Yolo Bypass would be physically modified and operated to improve rearing and spawning habitat, increase frequency of floodplain inundation in Yolo Bypass, and improve fish passage into Putah Creek through Yolo Bypass and past Fremont and Sacramento Weirs. The maximum extent of inundation in the Yolo Bypass would not increase from current conditions, but the frequency and duration of inundation events would increase. The Yolo Bypass Wildlife Area provides opportunities for upland recreational activities, including waterfowl and upland game bird hunting, hiking and walking, wildlife viewing, botanical viewing, and nature photography. Because the wildlife area closes during periods of inundation, this measure would decrease opportunities for these activities as a result of the longer inundation periods in the Yolo Bypass. Removal of berms and levees could also decrease recreational access in the Yolo Bypass. Construction activities would also temporarily affect the quality of activities by introducing noise, odors, and unattractive visual scenes into the recreational environment. However, longer inundation events could also attract more game birds and other wildlife, which would improve hunting and wildlife viewing experiences during non-flooding periods.

CM3 provides the mechanism and guidance for land acquisition and establishment of a system of conservation lands in the Plan Area necessary to meet BDCP natural community and species habitat protection objectives. This system of conservation lands will be built over the implementation term of the BDCP to protect and enhance areas of existing natural communities and covered species habitat, protect and maintain occurrences of selected plant species with very limited distributions, provide sites suitable for restoration of natural communities and covered species habitat, and provide habitat connectivity among the various BDCP conservation land units in the system. This measure includes tidal habitat restored under CM4; valley/foothill riparian habitat restored under CM7; grassland habitat restored under CM8; 8,000 acres of grassland habitat protected, vernal pool complex restored to achieve no net loss under CM9; 600 additional acres vernal pool complex protected, nontidal freshwater perennial emergent wetland and nontidal perennial aquatic habitat restored under CM10; 400 acres of alkali seasonal wetland complex protected and 16,620–32,640 acres of agricultural habitats protected. Depending on the acquisition strategy implemented through this measure, recreational access for upland activities could be expanded or diminished. Mechanisms that permit public access would increase opportunities related to upland hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing. Alternatively, acquisition that would exclude public recreational use would decrease opportunities for these activities.

CM4 provides for restoration of 14,000 acres of freshwater and brackish tidal habitat in the near-term and up to 65,000 acres in the late long-term. In the late long-term, BDCP implementation would provide for the cumulative restoration of 65,000 acres of freshwater and brackish tidal habitat in the BDCP ROAs under Alternative 1A. The extent of restored tidal habitat includes shallow subtidal aquatic habitat, restored tidal mudflat, restored tidal marsh plain habitat, and adjoining transitional upland habitat. Areas to be restored would be modified by breaching and lowering levees, constructing new or modified levees to protect adjacent areas from flooding, connecting remnant sloughs or channels to improve circulation, and modifying ground elevations to reduce effects of subsidence. Site preparation and earthwork associated with this restoration could result in temporary closure to recreational areas and excess noise, decreasing recreational quality. Additionally, some upland areas would be converted to tidal habitat as part of this measure, limiting access for upland recreation activities including upland hiking and walking, camping, picnicking, and nature viewing and photography. However, because transitional upland habitat adjoining tidal areas would also be restored, this could also create new opportunities. Furthermore, restoration actions adjacent to existing recreational areas could enhance the quality of the experience in these areas.

CM5 provides for the restoration of 1,000 acres of seasonally inundated floodplain habitat within the Delta in the near-term and up to 10,000 acres in the late long-term Seasonally inundated floodplain restoration could occur along channels in many locations in the north, east, and/or south Delta. In most areas, setback levees would be constructed to modify the channel configuration. The most promising opportunities for large-scale restoration are in the south Delta along the San Joaquin, Old, and Middle River channels; these locations offer benefits to covered fish species, practicability considerations, and compatibility with potential flood management projects. Levee removal and construction, as well as increased inundation of formerly upland areas, would temporarily and permanently limit access, diminishing opportunities for a range of upland recreational activities including upland hiking, walking, camping, picnicking, upland game hunting, sightseeing, wildlife and botanical viewing, and nature photography. Noise, odors, and visual degradation from construction would also temporarily affect upland recreational quality. However, restoration under this measure would provide additional on-water waterfowl hunting opportunities and improve the quality of recreational experiences in existing and adjacent recreation areas.

Channel margin habitat enhancement would modify channel geometry and restore riparian, marsh, and mudflat habitats along existing levees. Under CM6 at least 5 miles of habitat would be enhanced within the first 10 years and up to 20 miles after 30 years. At least 5 of the 20 miles of channel margin enhancement would take place along the Sacramento River and at least 5 miles would be along the San Joaquin River. The remaining 10 miles would be distributed among other fish migration channels. Earthwork and site preparation associated with habitat enhancement may limit access to existing upland recreational areas and degrade the recreational experience. This measure would create benches on the outboard side of levees or create setback levees. Where setback levees and associated enhancement activities close access to existing upland areas, associated recreational opportunities such as wildlife viewing and hiking would be reduced. Where habitat enhancement creates new upland areas accessible to recreationists, the opportunities for upland activities would improve. In either case, habitat enhancements would improve the experience of wildlife-dependent upland recreational activities from existing, adjacent recreation areas.

CM7 would restore 400 acres of riparian habitat in the first 15 years and up to 5,000 acres within 30-years. Areas chosen for implementation of this measure would be associated with restoration and enhancement activities associated with Conservation Measures 4, 5, and 6. By year 40 of implementation, the BDCP would cumulatively restore 5,000 acres of riparian habitat. Restoration of

riparian habitat would support fish habitat by increasing the input of organic material and by increasing the extent of shaded riverine aquatic cover. While construction activities and access restrictions associated with this component may temporarily or permanently reduce opportunities for or quality of upland recreational activities, this measure would restore riparian habitat, which would support increased opportunities and improved quality of upland game hunting, wildlife viewing, botanical viewing, nature photography, hiking, walking, picnicking, and sightseeing.

Under CM8, 2,000 acres of grassland within CZ 1, CZ 8, and CZ 11 would be restored. Restoration activities for this measure would be associated with tidal habitat restoration under CM4 and agricultural land protection under CM3. Anticipated actions to restore grassland habitat, as appropriate to site-specific conditions, would include, but not be limited to, acquiring lands, in fee title or through conservation easements, with site characteristics that support restoration of high–value grassland, restoring grassland by sowing native species using a variety of techniques, and potentially restoring grazing grassland habitat to modify its vegetation. While earthwork and site preparation of these areas could temporarily degrade recreational access and quality by introducing noise and odors into the setting, restoration of grassland communities would increase opportunities for upland hunting, wildlife viewing, botanical viewing, and nature photography due to improvements to wildlife and native plant habitats. Restoration of natural areas under this measure would also increase opportunities for upland hiking, walking, picnicking, and sightseeing.

Under CM9, vernal pool complex in CZ 1, CZ 8, and CZ 11 would be restored to achieve no net loss of this habitat type associated with BDCP covered activities. Anticipated actions to restore vernal pool complex habitat include acquiring lands, in fee-title or through conservation easement, suitable for restoration of vernal pool complex habitat; restoring remnant natural vernal pool and swale topography; restoring and maintaining natural hydrology; restoring and maintaining natural salt and suspended clay concentrations in vernal pool water; significantly reducing or preventing the deposition of substances that increase the fertility of the habitat; controlling the cover of invasive nonnative plant species; adjusting livestock grazing regimes in vernal pool complexes; preventing the introduction of invasive species; and hand collecting seed and vernal pool invertebrates from the vicinity of the vernal pools to be restored as a source for establishment of native species. Activities associated with the implementation of this measure could temporarily limit access to existing recreational opportunities and create noise, detracting from the experience; however, restoration of vernal pool complexes is anticipated to modestly increase opportunities for upland recreation including wildlife viewing, botanical viewing, and nature photography.

Under CM10, 400 acres of nontidal freshwater marsh within CZ 2 and CZ 4 would be restored. Restored habitat would be distributed in patches of at least 25 acres and associated with occupied giant garter snake habitat within the proposed 1,000-acre giant garter snake preserves designed to enhance the Coldani Marsh/White Slough and Yolo Basin/Willow Slough giant garter snake populations. Restored nontidal wetlands would also be designed and managed to support other native wildlife functions including waterfowl foraging, resting, and brood habitat and shorebird foraging and roosting habitat. Restored habitat would include preserved transitional upland habitat to provide upland habitat for giant garter snakes and western pond turtles and nesting habitat for waterfowl. While construction activities and access restrictions associated with this measure may reduce some upland recreational opportunities and create temporary construction effects from activities producing noise or odors, improvements in wildlife and native plant habitats associated with the measure would increase the quality of upland hunting, wildlife viewing, botanical viewing, and nature photography in and adjacent to restored areas.

Under CM11, management plans for natural communities may be prepared for specific reserves or for multiple reserves within a specified geographic area. Management and enhancement actions would be implemented for the following natural communities: tidal aquatic and wetland, nontidal aquatic and wetland, riparian, grasslands and associated seasonal wetland, inland dune scrub, and agricultural lands and managed wetlands. Depending on the level of recreational access granted by management plans, this measure could increase or decrease opportunities related to upland hunting, hiking, walking, wildlife viewing, botanical viewing, nature photography, picnicking, and sightseeing.

Implementing the conservation measures could result in an adverse effect on recreation opportunities by reducing the extent of upland recreation sites and activities. Once implemented, the conservation measures could adversely affect recreation by reducing the extent of upland areas suitable for hiking, nature photography, or other similar activity. Once implemented, recreation could benefit improving the quality of existing upland recreation opportunities.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.3 Alternative 1B—Dual Conveyance with East Canal and Intakes 1–5

Construction of Structural/Physical Components

Table 15-11 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter 17, *Visual Resources*, and Chapter 23, *Noise*, for additional visual- and noise-related effects on recreationists.

Table 15-11. Recreation Sites Potentially Affected by Construction of Alternative 1B

Sites in the Construction Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
	Clarksburg Fishing Access	Clarksburg Marina
Stone Lakes NWR (Private Land)	Stone Lakes NWR (Private Land)	Stone Lakes NWR (Public Use)
White Slough Wildlife Area	Cosumnes River Preserve	White Slough Wildlife Area
Cosumnes River Preserve	Woodbridge Ecological Preserve	King Island Resort
	White Slough Wildlife Area	Delta Meadows
	King Island Resort	Paradise Point Marina
	The Reserve at Spanos Park Golf Course	RiverPoint Landing
	Windmill Cove	Stockton Sailing Club
	Whiskey Slough Harbor	Buckley Cove Park

Sites in the Construction Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
	Clifton Court Forebay	Weber Point Yacht Club
	Lazy M Marina	
	Rivers End Marina	

Source: Compiled by DHCCP in 2010.
Note: CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The Alternative 1B construction footprint includes canal alignment, temporary work areas, bridge right-of-way areas, and a potential borrow/spoil area in the Stone Lakes NWR, as well as two small temporary work areas and a bridge right-of-way area in the Pond 6 portion of the White Slough Wildlife Area and tunnel alignment beneath a portion of the Cosumnes River Preserve (Table 15-11). The portion of Stone Lakes NWR in the Alternative 1B right-of-way consists primarily of private land within the approved refuge boundary that is part of the cooperative wildlife management area, but is considered nonrefuge land. There are no existing or planned public recreation facilities in this area of the NWR (U.S. Fish and Wildlife Service 2007). Therefore, the Alternative 1B facilities in this area of the Stone Lakes NWR would not adversely affect recreation opportunities in the NWR. The bridge right-of-way is along the border of the Pond 6 portion of White Slough Wildlife Area and would not displace any existing recreational facilities. A portion of the right-of-way is a tunnel located beneath a parcel that is in a conservation easement as part of the Cosumnes River Preserve. Placement of the tunnel beneath the preserve would not permanently displace any recreation facilities or opportunities offered by the preserve.

Alternative 1B would result in temporary siting of construction work areas in or near national wildlife refuges, wildlife areas, and preserve lands, but would not result in any adverse effects on recreation facilities because there would be no permanent displacement of those facilities.

CEQA Conclusion: Alternative 1B would result in temporary siting of work areas in or near national wildlife refuges, wildlife areas and preserves, but would not result in any permanent displacement of recreation facilities. The impact is considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

A total of 12 recreation sites are located in the Alternative 1B CPA, and 10 sites are located within 1,000 feet of the CPA (Table 15-11). Because these recreation sites are in the immediate vicinity of the Alternative 1B right-of-way construction areas, they may be subject to direct effects on recreation opportunities. Adverse effects may include restricted access to a recreation facility or use; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction activities that adversely affects the ability of visitors to participate in recreational activities at the site. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period.

The effects on recreation opportunities at the Clarksburg Fishing Access, Clifton Court Forebay, Lazy M Marina, Rivers End Marina, and Clarksburg Marina during construction of Alternative 1B would be similar to the effects previously described for Alternative 1A.

Specific effects that could occur at each of the remaining sites are discussed below.

Stone Lakes National Wildlife Refuge

The portion of Stone Lakes NWR in the CPA consists primarily of private land within the approved refuge boundary that is part of the cooperative wildlife management area but that is considered nonrefuge land. No public recreation facilities are located in or planned for this area of the NWR (U.S. Fish and Wildlife Service 2007). The part of Stone Lakes NWR located within 1,000 feet of the CPA boundary is part of the core public use areas and includes the Beach Lake and North Stone Lake Units of the NWR. These two units are open to the public two Saturdays a month for hiking, wildlife viewing, and interpretation activities, including docent-led seasonal wetland hikes. Environmental education also occurs in the Beach Lake Unit, as well as guided wildlife viewing and interpretation paddle trips on Lower Beach Lake and the Walk on the Wild Side Festival.

Because of the proximity of the alignment and associated construction work areas and borrow/spoil areas, there could be effects on wildlife viewing and environmental education opportunities with the NWR, depending on the timing of construction. If construction activities were to make these two units of the NWR less hospitable for wildlife, then there would be temporary effects on wildlife viewing and some environmental education opportunities within the NWR (those that depend on the presence of wildlife). Hiking, interpretation, and some environmental education opportunities would still be feasible within the NWR; however, the recreation experience of refuge visitors may be adversely affected by construction activities.

Cosumnes River Preserve

The Cosumnes River Preserve provides opportunities for fishing, hiking, paddling, wildlife viewing, and environmental education. A few specially designated areas have also been set aside for limited hunting. Fishing is allowed only from a boat, in the river. Although the right-of way traverses a portion of the Cosumnes River Preserve located west of Interstate 5, this portion of the alignment includes a tunnel component with no surface disturbance. A canal component of the alignment and associated construction would be located immediately north of this portion of the Cosumnes River Preserve and Snodgrass Slough. Because of the proximity of the construction activities, depending on the timing of construction, construction noise could have an effect on wildlife viewing and environmental education opportunities. The recreation experience of refuge visitors may also be adversely affected by construction activities due to noise and disturbance.

White Slough Wildlife Area

Effects on White Slough Wildlife Area would be similar to the adverse effects previously described for the Alternative 1B right-of-way evaluation. The Alternative 1B CPA includes the McCormack-Williamson and Stokes properties of the Cosumnes River Preserve, which do not offer public recreation opportunities. Only the Pond 6 portion of the White Slough Wildlife Area is included within the CPA. Ponds 7–12 within the White Slough Wildlife Area are located within 1,000 feet of the CPA boundary surrounding the canal alignment, temporary work areas, and bridge rights-of-way. All of the areas within the White Slough Wildlife Area that are adjacent to the CPA are more than 1,000 feet from construction areas. Access to the wildlife area would be maintained from SR 12,

and fishing and hiking opportunities should not be affected by canal construction activities because the ponds are located more than 1,000 feet from the canal. Depending on the timing of construction and effects on wildlife, wildlife viewing and hunting opportunities within the wildlife area could be adversely affected if construction noise makes the wildlife area less hospitable for wildlife.

McCormack-Williamson

The McCormack-Williamson property of the Cosumnes River Preserve is also located within 1,000 feet of the CPA boundary around the canal/tunnel alignment. Other Cosumnes River Preserve properties within 1,000 feet of the CPA boundary include the Wong, Kraus DU (Ducks Unlimited), and Martin (conservation easement only) properties. These properties currently do not offer public recreation facilities, nor are they used for recreation. Therefore, there would be no adverse effects on recreation opportunities.

Woodbridge Ecological Reserve

Both the North and the South Units of the Woodbridge Ecological Reserve are included within the CPA. The area south of Woodbridge Road, called the South Unit, is adjacent to a temporary borrow/spoil area. The South Unit is open to the public year-round and contains interpretive panels and a view platform for watching sandhill cranes. Similar to the White Slough Wildlife Area, opportunities for wildlife viewing would likely be unavailable in the South Unit because construction noise and activities close to the reserve would likely make the area temporarily less hospitable for wildlife, prohibiting visitors from participating in wildlife viewing activities in areas of construction.

The North Unit, located north of Woodbridge Road, is east of the canal alignment and two temporary work areas. Visitors can access this unit only on a docent-led sandhill crane tour between October and February. Construction noise could affect wildlife viewing opportunities in this unit, depending on the timing of canal construction. If canal construction does not occur during sandhill crane viewing season, then noise effects would likely be minimal to none. If construction occurs during sandhill crane viewing season, wildlife viewing opportunities at the site may be severely affected (to the point of prohibiting use), depending on the volume of noise and its effect on sandhill cranes.

Visitors to both units of the Woodbridge Ecological Reserve would likely be able to see and hear nearby construction activities. Construction noise and the resulting reduced opportunities for wildlife viewing could affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience of visitors. Design Measure 15-4, Noise Management (Section 15.5.1), includes provisions to minimize noise emissions. Measures would include preparing and implementing a noise abatement plan and other measures, including constructing temporary sound walls or rerouting truck traffic to avoid or reduce noise effects on sensitive locations, which would lessen the adverse effects on the recreation experience of visitors near construction areas.

Kings Island Resort

King Island Resort is a large marina with 232 berths, a ramp, picnic facilities, pump-out facilities, and houseboat rentals along Honker Cut and Disappointment Slough (Appendix 15A). The far eastern portion of the resort, containing about 40 berths along Disappointment Slough, is included within the CPA. A small portion of the boat storage at King Island Resort marina is also located in the CPA, west of the canal alignment. On-water and vehicular access to this portion of the marina's boat

storage area and use of the storage area would not be affected by canal construction activities. Therefore, there would be no adverse effects on recreation opportunities at the marina.

Reserve at Spanos Park Golf Course

The Reserve at Spanos Park Golf Course is located east of a temporary borrow/spoil area. Access to the site would be maintained using West Eight Mile Road or a detour. There may be additional truck traffic on Eight Mile Road during construction. Golfing opportunities would still be available at the course during construction activities, which would occur adjacent to the course on the west. Golfers at the course may be able to both see and hear construction activities in the borrow/spoil area, which could have a temporary negative effect on the recreation setting and their recreation experiences while golfing, particularly on the west side of the course.

Windmill Cove Marina

Windmill Cove marina, located just off of the San Joaquin River near Fourteen Mile Slough, includes 25 berths and a launch ramp and provides camping and picnicking opportunities (Appendix 15A). Whiskey Slough Harbor provides 80 berths, a launch ramp, pump-out facilities and camping opportunities at the terminus of Whiskey Slough (Appendix 15A). Windmill Cove Marina is located off the San Joaquin River south of a temporary borrow/spoil area. Vehicular access to the marina would be maintained using Windmill Cove Road or a detour. There may be additional truck traffic on Windmill Cove Road during construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by land-based construction activities. Boating, picnicking, and camping opportunities would still be available at the marina during construction at the adjacent borrow/spoil area; however, the recreation experience of marina users may be adversely affected by construction activities.

Because of the height of the levee near the marina, it is unlikely that the borrow/spoil area would be visible to marina users. However, marina users may be able to hear construction activity noise, which could temporarily negatively affect the recreation setting and their recreation experiences at the marina.

Whiskey Slough Harbor Marina

Whiskey Slough Harbor marina is located on Whiskey Slough west of a temporary borrow/spoil area. Vehicular access to the marina would be maintained using West Whiskey Slough Road or a detour. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by land-based construction activities. Boating and camping opportunities would still be available at the marina during construction at the adjacent borrow/spoil area; however, the recreation experience of marina users may be affected by construction activities. Marina users may be able to both see and hear construction activities in the borrow/spoil area, which could temporarily negatively affect the recreation setting and their recreation experiences at the marina.

Delta Meadows

Delta Meadows, part of the State Park system, is located across Snodgrass Slough west of the CPA boundary. Access to the property would be maintained and would not be affected by canal construction. Recreation opportunities within the property would also not be adversely affected by construction because a distance of more than 1 mile separates the property and the construction area.

Paradise Point Marina

The Paradise Point Marina is located along Bishop Cut and Disappointment Slough adjacent to the CPA boundary of the canal alignment and a temporary work area. Vehicular access to the marina would be maintained using Rio Blanco Road or detour. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by canal and temporary work area construction activities. Boating and picnicking opportunities would still be feasible at the marina during canal construction; however, the recreation experience of marina users may be adversely affected by construction activities.

RiverPoint Landing, Stockton Sailing Club, and Buckley Cove Park

The RiverPoint Landing, Stockton Sailing Club, and Buckley Cove Park are northeast of the CPA boundary, near where it crosses the San Joaquin River Deep Water Ship right-of-way. The RiverPoint Landing marina provides 160 berths, a ramp, and picnic facilities. Adjacent to the marina is the Stockton Sailing Club, which provides 288 berths (Appendix 15A). Vehicular access to three sites would be maintained using Buckley Cove Way or a detour. On-water access to the three sites would also be maintained, and use of the boating facilities at all three sites would not be adversely affected by construction at the temporary work area. Boating and picnicking opportunities would still be feasible at the marina and park, and boating would still be feasible at the sailing club during construction at the temporary work area; however, the recreation experience of marina users may be adversely affected by construction activities.

Weber Point Yacht Club

The facilities for the Weber Point Yacht Club are located on the northeast side of Hog Island along the San Joaquin River. The facilities are located just outside the CPA boundary but within 1,000 feet of a borrow/spoil area. On-water access to the club's facilities would not be adversely affected by construction. There is no vehicular access to the club site. Use of the club's boating facilities would not be adversely affected by land-based construction of the borrow/spoil area on the other side of the San Joaquin River. Boating opportunities would still be feasible at the club site during construction of the borrow/spoil area across the river; however, the recreation experience of club members may be adversely affected by construction activities. Club members may be able to hear construction activities at the borrow/spoil area, but would not be able to see construction because it would occur below and behind the levee. Construction noise could temporarily negatively affect the recreation setting for club members and thus their recreation experiences at the club site.

Adverse effects related to temporary disruption of recreational activities would be as a result of construction noise, additional construction traffic, and detours from typical access points, and visual degradation of the recreation setting, Access to all the recreational facilities within the CPA would be maintained during construction. After the conveyance facilities are installed, all disturbed areas including the borrow/spoil and temporary work sites would be restored, restoring the recreation setting for visitors to these areas. Because construction would disrupt recreational activities for these facilities, effects are considered adverse.

CEQA Conclusion: Temporary effects due to disruption of use of recreational facilities within the CPA and 1,000 feet from the area would occur as a result of construction noise, construction-related traffic, detours from typical access points, and visual degradation of the recreation setting and therefore recreation experience. After the conveyance facilities are installed, all disturbed areas including the borrow/spoil and temporary work sites would be restored, restoring the recreation

setting for visitors to these areas. Access to all the recreational facilities within the CPA would be maintained during construction. The Noise Management Environmental Commitment and Mitigation Measure REC-1 would lessen these impacts. These impacts are considered less than significant.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Changes to boat passage and navigation, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 1B. Temporary channel closures may also be required that could impede boat movement. Construction of all three types of intakes under consideration (in-river near the middle of the river, in-river near the bank, and on-bank) and siphons would include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary barge unloading facilities could also be located at the intake sites, spoil disposal areas, or tunnel vent and shaft work areas. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion in high traffic areas, as could the placement of cofferdams or barge unloading facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could cause further boat traffic delays in the vicinity of the construction sites.

Intakes

The proposed locations of the intakes for Alternative 1B are the same as those described for Alternative 1A. Effects on boat passage and navigation would be the same as those described in Impact REC-3 above.

Temporary Barge Unloading Facilities

Alternative 1B includes a temporary barge unloading facility to be built on Fourteen Mile Slough, at the junction of the slough and the San Joaquin River. The facility would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. The facility would occupy about 1,000 feet of the west bank of the slough. The slough is about 150 feet wide at this location. Therefore, the barge facility and barge operations would occupy a substantial portion of the slough, constricting or preventing boat passage. However, the slough splits around an in-channel island at this location. The similarly sized channel on the east side of the in-channel island provides an alternate route for boaters to use in moving between the San Joaquin River and Fourteen Mile Slough. The alternate route around the in-channel island would add less than 2,000 feet to the travel distance. Therefore, boaters would have the ability to avoid the barge facility, and effects on boat passage would be minor and temporary, lasting approximately five years. [*Note to Reviewers: Additional detail will be incorporated once more detailed construction duration information is available*].

Siphons

Construction of the seven siphons associated with Alternative 1B would result in temporary obstruction of boat passage and may also cause boat traffic delays or navigation hazards to boaters. The siphons would cross seven navigable waterways:

- Stone Lakes Drain
- Beaver Slough
- Hog Slough
- Sycamore Slough
- White Slough
- Middle River
- Disappointment Slough

Culvert siphons would be constructed using cofferdams and open cut-and-cover construction methods with conventional cast-in-place concrete structures. For most siphons, a bypass channel would be constructed to redirect the water away from the work area. For wider sloughs or where other restrictions exist, culvert siphons could be constructed in two or three phases, each phase lasting up to 1 year, depending on construction permit conditions. In each phase, a temporary cofferdam surrounding the work area would be installed that would occupy as much as one-half the width of the waterway.

Four of the seven navigable waterways to be crossed by a siphon (Stone Lakes Drain, Beaver Slough, Hog Slough, and Sycamore Slough) are on narrow, dead-end sloughs and within approximately 1 mile of the easternmost limit to navigation. The siphon under White Slough would be about 3 miles from the nearest marina facility, and the location does not appear to be a major boat traffic thoroughfare given its relatively remote location in relation to major waterways.

Boat traffic volume in the vicinity of these five siphons is expected to be low, and most waterway use is likely limited to anglers. The construction of siphons would temporarily impede boat movement on these waterways; however, because the waterways provide access to dead-end sloughs or do not support large boat traffic volumes, the temporary impediment on these waterways would not substantially alter boat movement in the Delta.

Boat traffic volume on Middle River in the vicinity of the siphon crossing has been observed to be low because of the narrow and shallow character of the waterway channel (DWR and Reclamation 2005). Boat traffic volume in the vicinity of the Disappointment Slough siphon may be high at times because of the slough's proximity to Paradise Point Marina, which provides more than 200 boat berths and a boat ramp. However, boaters may also choose to bypass the siphon construction site by using other waterways in the vicinity, such as Bishop Cut and Fourteen Mile Slough. The construction of siphons would temporarily obstruct boat movement on these waterways; however, because the waterways do not support large boat traffic volumes and alternative navigational routes are available, the temporary impediment on these waterways would not substantially alter boat movement in the Delta.

Although boats would not be able to use the portion of the waterway where construction of the siphons was occurring, the use of each of these waterways for recreational navigation would be allowed to continue during construction.

Changes to boat passage and navigation on the Sacramento River in the vicinity of the intakes, barge unloading facilities and the siphons would result in adverse direct and indirect effects on recreational navigation in the affected waterways. Direct effects would result from the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement, and the reduced recreational experience due to construction noise. Changes to boat passage would also result in effects on recreational navigation and water-based activities recreation activities such as wakeboarding, waterskiing and tubing. Although there may be short delays in boat passage, access to the affected waterways would be maintained. The sloughs where siphons would cross do not support large boat traffic volumes and construction activities would not result in substantial adverse effects. However, because boat passage and navigation would be disrupted, effects are considered adverse.

CEQA Conclusion: Alternative 1B would result in significant effects to boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays, impediments to boat movements and the reduced recreational experience to due to construction noise. Changes to boat passage and navigation will also result in temporary effects on wakeboarding, waterskiing and tubing due to reduced speeds and passage impediments. The environmental commitments for Navigation Protection and Noise Management and Mitigation Measure REC-1 would reduce these effects, but not to a less-than-significant level. Therefore these effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects relating to recreational fishing will be determined after completion of the fisheries impact analysis.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to seven years at each facility.

CEQA Conclusion: [*Note to Reviewers: CEQA conclusions will be developed after completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received and reviewed. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis.*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects of maintenance activities would be the same as described for Alternative 1A, Impact REC-6.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Maintenance activities for the conveyance facilities would not affect recreation opportunities. Maintenance activities for these facilities would occur within the facility right-of-way. The right-of-way includes the Stone Lakes NWR, White Slough Wildlife Area, and Cosumnes River Preserve; however, the lands in the Stone Lakes NWR and Cosumnes River Preserve in the right-of-way are not used for recreation, so no effects on recreation opportunities would occur. The conveyance facilities in the White Slough Wildlife Area include a bridge right-of-way; therefore, facility maintenance activities would be restricted to roadway maintenance and would not affect recreation opportunities in the wildlife area. There would be no substantial change to recreation opportunities as a result of maintenance of conveyance facilities. There are no adverse effects.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Effects of implementing the conservation components under Alternative 1B would be similar to those described for Alternative 1A above.

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 1B would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 1B would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 1B would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-10.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.4 Alternative 1C—Dual Conveyance with West Canal and Intakes W1–W5

[*Note to Reviewers: Intake numbers are subject to change.*]

Table 15-12 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter 17 Visual Resources and Chapter 27 Noise, for additional visual- and noise-related effects on recreationists.

Table 15-12. Recreation Sites Potentially Affected during Construction of Alternative 1C

Sites in the Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
Numerous Marinas or Houses with Docks	Cliff's Marina	Clarksburg Marina
Twitchell Island	Clarksburg Fishing Access	Stone Lakes NWR

Sites in the Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
	Arrowhead Harbor	Vieira's Resort
	Hidden Harbor Marina	New Anchor Marina
	Cliffhouse Fishing Access	Hennis Marina
	Jersey Island	Sunset Harbor
	Bridgepoint Marina	San Joaquin Yacht Club
	Viking Harbor	Wood's Yacht Harbor
	Harris Marina	Greg's Harbor
	Sea Horse Marina	Carol's Harbor
	Orwood Resort	Sam's Harbor
	Clifton Court Forebay	Rivers End Marina
	Lazy M Marina	Twitchell Island
	Twitchell Island	Jersey Island

Source: Compiled by DHCCP in 2010.
Note: CPA = Conveyance Planning Area

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The Alternative 1C right-of-way crosses the southern portion of Twitchell Island, which is included within the DFG-administered Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on state-owned lands on Twitchell and Sherman Islands (California Department of Fish and Game 2009c). Both the canal alignment (tunnel portion) and a vent shaft would run through the hunting area (Table 15-12). Access to the site would be maintained using existing roads or detours. Construction noise and activities could adversely affect hunting opportunities, depending on the timing of tunnel and vent shaft construction. If construction does not occur at the time of the hunt, then construction effects would likely be minimal to none. If construction occurs just before or during the hunt, recreation hunting both in and adjacent to the alignment (within the CPA) would be affected, with the degree of effect on the activity dependent on the noise levels and effects on game species.

There are numerous marinas or houses with docks along Dutch Slough within the Alternative 1C right-of-way that would be displaced during construction (Land Use Appendix __). Based on available information, it cannot be determined whether the facilities provide for public use or are currently operational [*Note: additional data will be compiled for definitive determination*].

No recreational facilities would be permanently displaced as a result of construction of Alternative 1C. There are no adverse effects related to displacement of existing recreational facilities.

CEQA Conclusion: The impact on recreation is considered less than significant because no recreational facilities would be permanently displaced as a result of construction of Alternative 1C.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

A total of 14 recreation sites are located in the Alternative 1C CPA or within 1,000 feet of the CPA. Because these recreation sites are in the immediate vicinity of the Alternative 1C right-of-way construction areas, they may be subject to direct effects such as restricted access to a recreation facility or use; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction activities that adversely affects the ability of visitors to participate in recreational activities at the site. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period. Effects specific to each area are described below.

Cliff's Marina

The western one-half of Cliff's Marina, including covered and uncovered boat storage, is in the CPA, southeast of the northernmost intake. Cliff's Marina has 123 berths and pump-out facilities. Construction of the intake would occur in river or on the opposite side of the Sacramento River. Vehicular access to the marina would be maintained using SR 160 or a detour; access is not expected to be a concern because most of the construction activity would occur on the east side of the Sacramento River. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction, although there could be increased barge traffic on the Sacramento River associated with construction of the intakes. Boating opportunities would still be available at the marina during intake construction; however, the recreation experiences of marina users may be adversely affected by construction activities. Because of a bend in the river downstream of the marina, it is unlikely that intake construction activities would be visible to marina users. In addition, the marina is more than 1 mile upstream of the intake site, so marina users likely would not be able to hear construction activities. Therefore, there would be no visual or auditory recreation setting effects and thus no effects on recreation experiences for users of Cliff's Marina.

Clarksburg Fishing Access

The Clarksburg Fishing Access is located about 2,750 feet upstream of the Intake 3 site and a new temporary access road and temporary work area. Construction of the intake would occur in the Sacramento River and on the west side of the river. Access to the Clarksburg Fishing Access site would be maintained using County Road E9 or a detour; access is not expected to be a concern because there is sufficient distance upstream to allow for continued use of the fishing access facilities. Construction noise could adversely affect fishing opportunities by making the site less desirable for fishing. On-water access to the site, as well as use of the boat ramp, would not be affected by activities downstream, upstream, or across the river.

Because of the bend in the Sacramento River, it is unlikely that the intake construction would be visible from the site; thus, there would be no visual effects on the recreation setting. The temporary work area would be located on the far side of the levee and thus would also not be visible to visitors to the fishing access. The temporary access road would connect to SR 160; the construction of this connection could be visible to visitors at the fishing access and could negatively affect the recreation setting for the fishing access. In addition, construction noise from the intake, access road, and work area could negatively affect the recreation setting and thus could affect the recreation experience of visitors participating in picnicking, boat launching, or fishing at the site.

Clifton Court Forebay, Lazy M Marina, and Rivers End Marina

The effects on recreation opportunities at Clifton Court Forebay, Lazy M Marina, and Rivers End Marina during construction of Alternative 1C would be similar to the effects identified for Alternative 1A.

Arrowhead Harbor Marina

Arrowhead Harbor Marina is located at the junction of Miner and Duck sloughs just west of the canal alignment, which includes a siphon under Miner Slough. Arrowhead Harbor on Miner Slough has 76 berths, a ramp, and picnic facilities. Vehicular access to the marina would be maintained using Holland Road or a detour. Traffic levels on Holland Road may increase because of construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction. Boating and picnicking opportunities would still be available at the marina during canal tunnel construction; however, the recreation experiences of marina users may be adversely affected by construction activities Construction activities in Miner Slough would not be visible to marina users. Marina users may be able to hear construction noise, however, which could temporarily affect the recreation setting and their recreation experiences at the marina.

Orwood Resort

Orwood Resort provides 50 berths, dry storage, launch ramps, fishing access, swimming, and camping and picnicking opportunities. Traffic levels on Orwood Road may increase because of construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction. If railroad bridge modifications across Werner Cut would be required as part of the railroad realignment, marina user delays in access to facilities may result because of in-channel construction activities. The recreation experiences of marina users may also be adversely affected by construction activities. During construction, the quality of visitors' recreation experiences would be reduced because adjacent construction activities would detract from the recreation setting (e.g., by causing excessive construction noise, dust and particulate emissions, and visual disturbances).

Hidden Harbor Marina

Hidden Harbor Marina is an all-sailboat facility located at the junction of Cache and Steamboat sloughs, just west of the Alternative 1C canal alignment. Vehicular access to the marina would be maintained using SR 84 or a detour. Traffic levels on SR 84 may increase because of construction. On-water access to the marina would also be maintained, and use of the marina's boating facilities would not be affected by construction. Boating opportunities would still be available at the marina during canal tunnel construction; however, the recreation experiences of marina users may be affected by construction activities. Construction activities in Steamboat Slough would not be visible to marina users. Marina users may be able to hear construction noise, however, which could temporarily affect the recreation setting and their recreation experiences at the marina.

Cliffhouse Fishing Access

The Cliffhouse Fishing Access is located on the Sacramento River, west of the canal alignment. The canal alignment is a tunnel east of the fishing access. Vehicular access to the site would be maintained using SR 160 or a detour. Traffic levels on SR 160 may increase because of construction. Construction activities in the Sacramento River would not be visible to anglers at this site. Anglers

may be able to hear construction noise, however, which could temporarily affect the recreation setting and their recreation experiences.

Harris, Bridgeport, Viking Harbor, and Sea Horse Marinas

Harris, Bridgeport, Viking Harbor, and Sea Horse marinas are all small marinas located along Taylor and Dutch sloughs, primarily within and west of the canal alignment in the Bethel Island area. The canal alignment is a tunnel in the area near these marinas. Vehicular access to the marinas would be maintained using Dutch Slough, Sunset, or Levee roads or a detour. Traffic on these roads may increase because of construction. On-water access to the marinas would also be maintained, and use of the marinas' boating facilities would not be affected by construction activities. Boating opportunities would still be available at the marinas during tunnel construction; however, the recreation experiences of marina users may be adversely affected by construction activities. Because the alignment is a tunnel near these marinas, construction activities in Taylor and Dutch sloughs would not be visible to marina users. Marina users may be able to hear construction noise, however, which could temporarily affect the recreation setting and their recreation experiences at the marinas.

Twitchell Island

The Alternative 1C right-of-way crosses the southern portion of Twitchell Island, which provides hunting activities. Construction noise and the resulting reduced opportunities for hunting could affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience of hunters. Construction noise could affect hunting opportunities by making the site less hospitable for waterfowl and pheasants. If construction noise is not loud enough to affect waterfowl and pheasants, it could still negatively affect the recreation experience of hunters.

Jersey Island

A portion of Jersey Island is included in and adjacent to the CPA, west of the Alternative 1C alignment. Recreation opportunities within this portion of Jersey Island include fishing, hiking, and hunting. The canal alignment east of Jersey Island is a tunnel. Access to the site would be maintained using Jersey Island Road or a detour. In addition, because the tunnel would be constructed at least 2,000 feet east of the island, recreation opportunities at Jersey Island would not be affected by construction activities. Because the tunnel would be constructed more than 2,000 feet east of the island, it is unlikely that construction activities would be visible or audible to recreationists on the island. Therefore, there would be no adverse effects on the recreation setting effects and thus no recreation experience effects for recreationists on Jersey Island within and adjacent to the CPA.

Clarksburg Marina

The Clarksburg Marina is a small marina on the Sacramento River with eight berths and located within 500 feet of the CPA boundary. The marina is also located more than 1,000 feet north of a temporary work area and temporary access road, as well as the northern boundary of the Intake 3 right-of-way. On-water and vehicular access to the marina would be maintained, and use of the marina's boating facilities would not be affected by land-based construction of the temporary access road and temporary work area. Boating opportunities would still be feasible at the marina during construction; however, the recreation experience of marina users may be adversely affected by construction activities. Marina users would likely not be able to hear intake construction activities. However, in-channel and shoreline intake construction activities may be visible to marina users;

therefore, there could be temporary negative effects on the recreation setting and thus the recreation experiences of marina users.

Stone Lakes NWR

The northern part of Stone Lakes NWR is within 1,000 feet of the CPA boundary surrounding the intake rights-of-way and a temporary borrow/spoil area on the west side of the Sacramento River. The part of Stone Lakes NWR outside of the CPA boundary is part of the core area of the NWR and includes the Beach Lake and North Stone Lake Units of the NWR. Access to the NWR would be maintained and likely would not be adversely affected by construction because most, if not all, construction would occur on the other side of the Sacramento River. The recreation opportunities within the Stone Lakes NWR would occur more than 1,000 feet east of the intake right-of-way and across the river and more than 1,000 feet from the temporary borrow/spoil area eastern boundary. Therefore, there would likely be no effect on recreation opportunities within the NWR unless the area became less hospitable for wildlife because of construction noise, which would degrade the recreation experience of visitors' due to a decreased ability to participate in wildlife viewing and some environmental education opportunities.

Vieira's Resort

Vieira's Resort is located on the Sacramento River east of the CPA boundary surrounding the canal alignment and a temporary work area encapsulating the terminus of a new permanent access road. The resort contains 160 berths, 57 campsites, and a ramp. Vehicular access to the resort would be maintained using SR 160, although there may be additional truck traffic on this highway because of construction. On-water access to the resort would also be maintained, and use of the resort's launch ramp would not be affected by construction activities. Camping and boating opportunities would still be feasible at the resort during construction. Construction noise could affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience of resort users.

New Anchor Marina, Hennis Marina, Sunset Harbor Marina, the San Joaquin Yacht Club

New Anchor Marina, Hennis Marina, Sunset Harbor Marina, and the San Joaquin Yacht Club are all located in the Bethel Island area both east and west of the CPA boundary around the canal alignment. New Anchor Marina is located on Taylor Slough and provides 75 berths and gas facilities. Hennis Marina is a small marina on Dutch Slough and contains only 10 berths. Adjacent to Hennis Marina is Sunset Harbor Marina, which contains 72 berths and a launch ramp (Appendix 15A).

These marinas are located more than 1,000 feet from the tunnel subsurface easement; thus, construction noise would likely not be audible to marina users. In addition, because the canal alignment is a tunnel in this area, construction activities would not be visible to marina users. Therefore, there would be no effects on the recreation setting and no effects on the recreation experiences of marina users.

Wood's Yacht Harbor and Greg's Harbor Marina

Wood's Yacht Harbor and Greg's Harbor Marina are also bcated on Dutch Slough and provide 60 and 16 berths, respectively. The San Joaquin Yacht Club provides 65 berths. Vehicular access to the marinas would be maintained using existing roads or detours, although traffic could be increased on existing access roads because of construction. On-water access to the marinas would also be maintained, and use of the marina's boating facilities would not be affected by construction

activities. Boating opportunities would still be feasible at the marinas during canal tunnel construction.

These marinas are located more than 1,000 feet from the tunnel subsurface easement; thus, construction noise would likely not be audible to marina users. In addition, because the canal alignment is a tunnel in this area, construction activities would not be visible to marina users. Therefore, there would be no effects on the recreation setting and no effects on the recreation experiences of marina users.

Carol's Harbor and Sam's Harbor Marinas

Carol's Harbor and Sam's Harbor marinas are located next to each other on Sandmound Slough, east of the CPA surrounding the Alternative 1C alignment, which is a tunnel in the area near these marinas. Carol's Harbor provides 16 berths and a ramp, whereas Sam's Harbor provides 27 berths (Appendix 15A). Although the marinas are within 1,000 feet of the CPA boundary, they are more than 1 mile from the canal alignment. Vehicular access to the marinas would be maintained using Sandmound Boulevard or a detour. In addition, on-water access to the marinas would be maintained, and use of the marina's boating facilities (including the launch ramp) would not be affected by construction activities. Boating opportunities would still be feasible at the marina during construction. Marina users would not be able to see or hear canal construction activities. Thus, there would be no effects on the recreation setting and thus the recreation experiences of marina users.

Construction of Alternative 1C facilities would disrupt the use of recreation facilities by generating construction noise, additional construction traffic, detours from typical access points, boat delays or impediments , and visual degradation of the recreational setting. The effect on recreation is considered adverse. The Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1 would be implemented to reduce these effects.

CEQA Conclusion: Construction of Alternative 1C facilities would result in significant impacts on recreation facilities within the CPA related to temporary disruption of recreation activities because of construction noise, additional construction traffic, detours from typical access points, boat delays or impediments and visual degradation of the recreational setting. These impacts would be temporary, lasting 5–7 years. Access to all the recreational facilities would be maintained during construction. The Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1 would reduce the impact on recreation, but not to a less-than-significant level. Therefore, impacts are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Changes to boat passage and navigation, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 1C. Construction of intakes and siphons would include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary bargeunloading facilities could also be located at the intake sites. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion, as could the placement of cofferdams or barge unloading

facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could delay boat traffic in the vicinity of the construction sites.

Intakes

Construction of the five Sacramento River intakes associated with Alternative 1C would result in temporary obstructions to boat passage and navigation and boat traffic delays in this reach of the Sacramento River. The planned locations of the intakes are the same as those proposed for Alternative 1A, as described previously, with the exception that intake facilities would be constructed on the west side of the river rather than the east side. As described in the discussion of Alternative 1A, the Sacramento River would remain navigable during construction; most of the river channel would remain open to passage.

Siphons

Construction of the four siphons associated with Alternative 1C would result in temporary obstruction of boat passage and may also cause boat traffic delays or navigation hazards to boaters. The siphons would cross four navigable waterways:

- Elk Slough
- Miner Slough
- Rock Slough
- Italian Slough

Culvert siphons would be constructed as culvert structures using cofferdams and open cut-and-cover construction methods with conventional cast-in-place concrete structures. For most siphons, a bypass channel would be constructed to redirect water away from the work area. For larger sloughs or where other restrictions exist, culvert siphons could be constructed in two or three phases, each phase lasting up to 1 year, depending on construction permit conditions. In each phase, a temporary cofferdam would be installed that would occupy as much as one-half of the width of the waterway.

The siphon across Elk Slough is located about 2.6 miles upstream from where Elk Slough joins Sutter Slough. Elk Slough is a narrow, winding waterway with no recreation facilities. Upstream, passage to Elk Slough is blocked by the Sacramento River levee road; therefore, boats can enter the slough only from the downstream end.

The siphon location on Rock Slough is near the west end of the slough, where the slough meets the Contra Costa Canal and boat navigation ends. Boat traffic volume in the vicinity of these two siphons is expected to be low, and most waterway use is likely by anglers. Effects on boat passage and navigation at the siphon locations on Elk Slough and Rock Slough would be minor.

The siphon location on Miner Slough is 2 miles west of where the waterway meets Sutter Slough and 5.3 miles upstream from where the waterway meets Cache Slough. Arrowhead Harbor Marina, with 76 boat berths, is a quarter-mile west of the siphon site. The siphon location on Italian Slough is located about one-third of a mile east of the west end of the slough, where navigation ends and where the Lazy M Marina is located, and about 2.5 miles west of the slough's junction with Old River. The marina provides about 35 berths, substantial dry storage, and a boat ramp and is likely the source of most boat traffic on Italian Slough.

Boat traffic volume in the vicinity of the siphons on Miner and Italian sloughs may be high at times because of the proximity of these marinas. Because boat traffic would be confined to a limited portion of the channel by the cofferdams, increased boat traffic congestion is likely to occur during peak use times (primarily summer weekends). However, boaters may choose to bypass the siphon construction site on Miner Slough by using the reach between the marina and Cache Slough. Although boats would not be able to use the portion of the waterway where construction was occurring, the use of each of these waterways for recreational navigation would be allowed to continue during construction.

Barge Unloading Facilities

Alternative 1C includes two barge unloading facilities to be built on Cache Slough and the Sacramento River. Construction and use of these facilities could also result in temporary effects on boat passage and navigation. The facilities would be used to transfer pipeline construction equipment and materials to and from construction sites and would be removed after construction was completed. Construction of the facilities may require partial channel closures and use of equipment within the waterways. The adverse effects from the construction of the barge unloading facilities would be temporary, lasting approximately five years.

The Cache Slough barge facility would occupy about 1,200 feet of the east bank of the slough, just south of the junction with Miner Slough and the Sacramento River Deep Water Ship Channel. The slough is about 650 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain, and there would be little effect on boat passage. Also, boat traffic volume is likely low at this location, although some traffic moving between Miner Slough and Arrowhead Marina (located about 5 miles north on Miner Slough) and Cache Slough or the Sacramento River (3 miles to the south) would be expected.

The Sacramento River barge facility would be about one-half mile east of (upstream from) the river's junction with Cache Slough and would occupy about 500 feet of the south riverbank. The river channel is about 700 feet wide at this location. Therefore, even if the barge facility and barge operations at this location occupied a substantial portion of the river, several hundred feet of unimpeded channel width would remain. However, peak boat traffic volume is likely to be high at this location. Viera's Resort, with 160 boat berths and a boat launch, and Long Island, with about 50 private homes with docks, are within 1 mile upstream. The City of Rio Vista, with two boat launches and a marina, is 2 miles downstream. Because boat traffic would be confined to a limited portion of the channel by the barge facility and barge unloading operations, increased boat traffic congestion may occur during peak use times (primarily summer weekends).

Alternative 1C would result in the creation of obstructions to boat passage causing boat traffic delays, impediments to boat movement, and reduced recreational experience to due to construction noise. The implementation of the Navigation Protection environmental commitment in combination with Mitigation Measure REC-1 would reduce these effects, however these effects would still be adverse.

CEQA Conclusion: Alternative 1C would result in significant effects to boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays, impediments to boat movements and the reduced recreational experience to due to construction noise. The implementation of Environmental Commitment Navigation Protection in

combination with Mitigation Measure REC-1 would reduce these effects, but not a less than significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects discussion relating to recreational fishing will be prepared after completion of the fisheries impact analysis.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to seven years at each facility.

CEQA Conclusion: [*Note to Reviewers: CEQA conclusions will be developed after completion of the fisheries impact assessment.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received and reviewed. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis.*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Intake maintenance activities, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment, could have a minor effect on boat passage and navigation in the Sacramento River. Major repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reducing opportunities for waterskiing, wakeboarding and tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment. In addition, the areas around the intakes are not commonly used for waterskiing, wakeboarding and tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in temporary, but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. [*Note: when available, insert estimated timeframes for in-water maintenance*].

Effects on boat passage and navigation resulting from the maintenance of intake facilities would be short-term and intermittent and would not be substantial enough to be considered adverse. Therefore effects are not adverse.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Maintenance activities for the conveyance facilities may include painting, landscaping, equipment replacement, and mechanical repairs would not affect recreation opportunities. Maintenance activities for these facilities would occur within the facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance activities would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 1C would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 1C would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 1C would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-10.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.5 Alternative 2A—Dual Conveyance with Tunnel and Five Intakes

For the purposes of assessment of effects on recreation, Alternative 2A is the same as Alternative 1A, with the following exceptions:

- Under Alternative 2A, a total of 5 intake facilities would be constructed and operated. Intake locations are 1 through 3 in addition to either 4 and 5, or 6 and 7.
- The operations scenario for Alternative 2A differs from Alternative 1A .

Construction of Structural/Physical Components

Table 15-13 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter 17, *Visual Resources*, and Chapter27, *Noise*, for additional visual- and noise-related effects on recreationists, respectively.

Table 15-13. Recreation Sites Potentially Affected by Construction of Alternative 2A

Sites in the Construction Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
	Clarksburg Fishing Access	Clarksburg Marina
	Stone Lakes NWR (Private Lands)	Stone Lakes NWR (Public Use)
	Georgiana Slough Fishing Access	Ko Ket Resort
	Venice Island Duck Club	Bullfrog Landing (Marina)
	Clifton Court Forebay	
	Lazy M Marina	
	Rivers End Marina	

Source: Compiled by DHCCP in 2010.
Notes:
No public recreation sites or use areas are located in the right-of-way or within 1,000 feet of the right-of-way.
CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Effects on recreation as a result of displacing existing facilities would be similar to those described under Alternative 1A, Impact REC-1.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects on recreation as a result of temporarily disrupting the recreation opportunities and uses would be similar to those described under Alternative 1A, Impact REC-2.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects on recreation as a result of temporarily altering recreation navigation during construction of intakes and barge unloading facilities would be similar to those described under Alternative 1A Impact REC-3.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects discussion relating to recreational fishing will be prepared on completion of the fisheries impact analysis.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to seven years at each facility.

CEQA Conclusion: [*CEQA conclusions will be developed after completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries chapter when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis.*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Changes to boat passage, navigation and water-based recreation activities as a result of maintenance of intake facilities and other structures would be similar to those described for Alternative 1A.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Changes to land-based recreation opportunities as a result of maintenance of conveyance facilities would be similar to those described for Alternative 1A.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2A would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2A would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 2A would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-10.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.6 Alternative 2B—Dual Conveyance with East Canal and Five Intakes

For the purposes of assessment of effects on recreation, Alternative 2B is the same as Alternative 1B, with the following exceptions:

- Under Alternative 2B, a total of 5 intake facilities would be constructed and operated. Intake locations are 1 through 3 in addition to either 4 and 5, or 6 and 7.
- Alternative 2B has a different operations scenario.

Alternative 2B Construction of Structural/Physical Components

Table 15-14 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter 17 Visual Resources and Chapter27, Noise, for additional visual- and noise-related effects on recreationists, respectively.

Table 15-14. Recreation Sites Potentially Affected by Construction of Alternative 2B

Sites in the Construction Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
Stone Lakes NWR (Private Land)	Clarksburg Fishing Access	Clarksburg Marina
White Slough Wildlife Area	Stone Lakes NWR (Private Land)	Stone Lakes NWR (Public Use)
Cosumnes River Preserve	Cosumnes River Preserve	White Slough Wildlife Area
	Woodbridge Ecological Preserve	King Island Resort
	White Slough Wildlife Area	Delta Meadows
	King Island Resort	Paradise Point Marina
	The Reserve at Spanos Park Golf Course	RiverPoint Landing
	Windmill Cove	Stockton Sailing Club
	Whiskey Slough Harbor	Buckley Cove Park
	Clifton Court Forebay	Weber Point Yacht Club
	Lazy M Marina	
	Rivers End Marina	

Source: Compiled by DHCCP in 2010.
Note: CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Temporary disruption from the use of existing facilities would be similar to those described under Alternative 1B.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Temporary disruption related to the use of existing recreational facilities would be similar to that described under Alternative 1B, Impact REC-2.

CEQA Conclusion: Access and availability of all the facilities within the CPA will be maintained. Nonetheless, construction of intakes and conveyance facilities will result in temporary disruptions to recreational opportunities and experiences in the Delta region during construction as a result of noise, traffic, and other disruptions related to construction activities. These effects would be temporary, but could last up to seven years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less-than-significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects on recreation as a result of temporarily altering recreation navigation during construction of intakes and barge unloading facilities would be similar to those described under Alternative 1B, Impact REC-3.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects assessment relating to recreational fishing will be conducted completion of the fisheries impact assessment.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to seven years at each facility.

CEQA Conclusion: [*Note to Reviewers: CEQA conclusions will be developed after completion of the fisheries impact assessment.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition,*

operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

The effects of maintenance activities on water-based recreation under Alternative 2B would be similar to those described under Alternative 1B.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

The effects of maintenance activities on land-based recreation under Alternative 2B would be similar to those described under Alternative 1B.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2B would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2B would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating

and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 2B would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-10.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.7 Alternative 2C—Dual Conveyance with West Canal Intakes W1–W5

For the purposes of assessment of effects on recreation, Alternative 2C is the same as Alternative 1C, with the following exception:

- The operations scenario for Alternative 2C differs from Alternative 1C.

Construction of Structural/Physical Components

Table 15-15 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter17, *Visual Resources*, and Chapter 27, *Noise*, for additional visual- and noise-related effects on recreationists.

Table 15-15. Recreation Sites Potentially Affected during Construction of Alternative 2C

Sites in the Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
Numerous Marinas or Houses with Docks	Cliff's Marina	Clarksburg Marina
Twitchell Island	Clarksburg Fishing Access	Stone Lakes NWR
	Arrowhead Harbor	Vieira's Resort
[when west alternate locations are determined: confirm no rec sites lie in right-of-way]	Hidden Harbor Marina	New Anchor Marina
	Cliffhouse Fishing Access	Hennis Marina
	Jersey Island	Sunset Harbor
	Bridgepoint Marina	San Joaquin Yacht Club
	Viking Harbor	Wood's Yacht Harbor
	Harris Marina	Greg's Harbor
	Sea Horse Marina	Carol's Harbor
	Orwood Resort	Sam's Harbor
	Clifton Court Forebay	Rivers End Marina
	Lazy M Marina	Twitchell Island
	Twitchell Island	Jersey Island

Source: Compiled by DHCCP in 2010.
Note: CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The Alternative 1C right-of-way crosses the southern portion of Twitchell Island, which is included within the DFG-administered Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on State-owned lands on Twitchell and Sherman Islands (California Department of Fish and Game 2009c). Both the canal alignment (tunnel portion) and a vent shaft would run through the hunting area (Table 15-12). Access to the site would be maintained using existing roads or detours. Construction noise and activities could adversely affect hunting opportunities, depending on the timing of tunnel and vent shaft construction. If construction does not occur at the time of the hunt, then construction effects would likely be minimal to none. If construction occurs just before or during the hunt, recreation hunting both in and adjacent to the alignment (in the CPA) would be affected, with the degree of effect dependent upon the volume of noise and its effect on game species.

There are numerous marinas or houses with docks along Dutch Slough within the Alternative 1C right-of-way that would be displaced during construction (Land Use Appendix __). Based on available information, it cannot be determined whether the facilities provide for public use or are currently operational [*Note: additional data will be compiled for definitive determination*].

No recreational facilities would be permanently displaced as a result of construction of Alternative 1C facilities. There are no adverse effects related to displacement of existing facilities.

CEQA Conclusion: The impact on recreation is considered less than significant because no recreation facilities would be permanently displaced as a result of construction of Alternative 1C.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Direct effects on recreation opportunities due to construction of facilities associated with water conveyance under Alternative 2C would be the same as those described under Alternative 1C, Impact REC-2.

CEQA Conclusion: Construction of Alternative 2C facilities on recreation facilities within the CPA would result in significant impacts related to temporary disruption of recreational activities from construction noise, additional construction traffic, detours from typical access points, boat delays or impediments and visual degradation of the recreational setting. These impacts would be temporary, lasting five to seven years. Access to all the recreational facilities would be maintained during construction. The Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1 would reduce the impact on recreation, but not to a less-than-significant level. Therefore, impacts are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Changes to boat passage and navigation under Alternative 2C would be the same as those described for Alternative 1C. Alternative 2C would result in the creation of obstructions to boat passage causing boat traffic delays, impediments to boat movement, and reduced recreational experience to due to construction noise. The implementation of the Navigation Protection Environmental Commitment in combination with Mitigation Measure REC-1 would reduce these effects; however, they would remain adverse.

CEQA Conclusion: Alternative 1C would result in significant effects to boat passage and navigation in the Sacramento River and other waterways within the Delta where intakes, temporary barge unloading facilities, and siphons occur. The creation of obstructions to boat passage would result in boat traffic delays, impediments to boat movements and the reduced recreational experience to due to construction noise. The implementation of Environmental Commitment Navigation Protection in combination with Mitigation Measure REC-1 would reduce these effects, but not a less than significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: Additional and more detailed effects discussion relating to recreational fishing will be prepared after completion of the fisheries impact analysis.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intake and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to seven years at each facility.

CEQA Conclusion: [*Note to Reviewers: CEQA conclusions will be developed after completion of the fisheries impact assessment.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis.*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of structural facilities is the same as described for Alternative 1C, Impact REC-6.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes in opportunities for land-based recreation as a result of maintenance of conveyance facilities is the same as described for Alternative 1C, Impact REC-7.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 2C would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel

margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 2C would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 2C would have similar effects on upland recreation activities as those described for Alternative 1A, Impact REC-10.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.8 Alternative 3—Dual Conveyance with Tunnel and Intakes 1 and 2

For the purposes of assessment of effects on recreation, Alternative 3 is the same as Alternative 1A, with the following exceptions.

- Alternative 3 includes Intakes 1 and 2 only.
- Alternative 3 has a different operations scenario.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Alternative 3 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only two intake locations would be constructed under Alternative 3. Effects from Alternative 3 would be anticipated to be less severe than those from Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects related to temporary disruption of recreation opportunities or experiences under Alternative 3 would be similar to those described for Alternative 1A; however, only two intake locations would be constructed under Alternative 3. While effects associated with Alternative 3 construction of physical components would be anticipated to be less severe than those under Alternative 1A, substantial disruption of recreation opportunities at the sites within the CPA would still occur. These would be considered adverse effects.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under this Alternative would be similar to those described for Alternative 1A; however, only two intake locations would be constructed under Alternative 3. While effects associated with this Alternative would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays,

temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for two intake facilities under this Alternative.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Opportunities for land-based recreation would be affected by maintenance of conveyance facilities in the same manner described for Alternative 1A. However, under Alternative 3, only two intake facilities would be constructed.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 3 would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 3 would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 3 would have similar impacts on upland recreation activities as those described for Alternative 1A.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.9 Alternative 4—Dual Conveyance with Tunnel and Intakes 1–3

For the purposes of assessment of effects on recreation, Alternative 4 is the same as Alternative 1A, with the following exceptions.

- Alternative 4 includes intakes 1–3, only.
- Alternative 4 has a different operations scenario.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Alternative 4 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only three intake locations would be constructed under Alternative 4. Effects from Alternative 4would be anticipated to be less severe than those from Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects related to temporary disruption of recreational opportunities or experiences under Alternative 4 would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 4. While effects associated with Alternative 4 construction of physical components would be anticipated to be less severe than those under Alternative 1A, substantial disruption of recreation opportunities at the sites within the CPA would still occur These would be considered adverse effects.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under this Alternative would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 4. While effects associated with this Alternative would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to

boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for three intake facilities under this Alternative.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Opportunities for land-based recreation would be affected by maintenance of conveyance facilities in the same manner described for Alternative 1A. However, under Alternative 4, only three intake facilities would be constructed.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 4 would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 4 would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 4 would have similar impacts on upland recreation activities as those described for Alternative 1A.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other

activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.10 Alternative 5—Dual Conveyance with Tunnel and 3,000 cfs Diversion

For the purposes of assessment of effects on recreation, Alternative 5 is the same as Alternative 1A, with the following exceptions.

- Only one intake facility would be constructed under Alternative 5.
- Alternative 5 has a different operations scenario.
- Under Alternative 5, tidal habitat restoration would be limited to 25,000 acres.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Alternative 5 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only one intake location would be constructed under Alternative 5. Effects from Alternative 5would therefore be anticipated to be less severe than those from Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under Alternative 5 would be similar to those described for Alternative 1A; however, only one intake location would be constructed under Alternative 5. While effects associated with Alternative 5 construction of physical components would be anticipated to be less severe than those under Alternative 1A, substantial disruption of recreation opportunities at the sites within the CPA would still occur. These would be considered adverse effects.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under this Alternative would be similar to those described for Alternative 1A; however, only one intake location would be constructed under Alternative 5. While effects associated with this Alternative would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for one intake facility under this Alternative.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Opportunities for land-based recreation would be affected by maintenance of conveyance facilities in the same manner described for Alternative 1A. However, under Alternative 5, only one intake facility would be constructed.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 5 would be similar to those described for Alternative 1A; however, under this Alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other action alternatives).

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 5 would be similar to those described for Alternative 1A; however, under this Alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other action alternatives).

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or

temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 5 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, only 25,000 acres of tidal habitat would be restored (instead of 65,000 acres under other action alternatives).

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.11 Alternative 6A—Isolated Conveyance with Tunnel and Intakes 1–5

For the purposes of assessment of effects on recreation, Alternative 6 is the same as Alternative 1A, with the following exceptions.

- Alternative 6A utilizes isolated conveyance.
- Alternative 6A has a different operations scenario.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The effects of water conveyance facility construction on existing recreational facilities would be the same as those described under Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

The temporary conflicts between recreational opportunities and the construction of conveyance facilities under Alternative 6A would be the same as those described under Alternative 1A.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Under this Alternative, recreational boat navigation would be affected to the same extent as under Alternative 1A.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects of facility maintenance activities on water-based recreation would be similar to those described under Alternative 1A.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects due to maintenance activities on land-based recreation under Alternative 6A would be the same as those described for Alternative 1A.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6A would be similar to those described for Alternative 1A.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6A would be similar to those described for Alternative 1A.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 6A would have similar impacts on upland recreation activities as those described for Alternative 1A.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.12 Alternative 6B—Isolated Conveyance with East Canal and Intakes 1–5

For the purposes of assessment of effects on recreation, Alternative 6B is the same as Alternative 1B, with the following exceptions.

- Alternative 6B utilizes isolated conveyance.
- Alternative 6B has a different operations scenario.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The effects of water conveyance facility construction on existing recreational facilities would be the same as those described under Alternative 1B.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

The temporary conflicts between recreational opportunities and the construction of conveyance facilities would be the same as those described under Alternative 1B.

CEQA Conclusion: Access and availability of all the facilities within the CPA will be maintained. Nonetheless, construction of intakes and conveyance facilities will result in temporary disruptions to recreational opportunities and experiences in the Delta region during construction as a result of noise, traffic, and other disruptions related to construction activities. These effects would be temporary, but could last up to seven years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less-than-significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Under this Alternative, recreational boat navigation would be affected to the same extent as under Alternative 1B.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects of facility maintenance activities on water-based recreation would be similar to those described under Alternative 1B.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects due to maintenance activities on land-based recreation under Alternative 6B would be the same as those described for Alternative 1B.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Measures

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6B would be similar to those described for Alternative 1B.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6B would be similar to those described for Alternative 1B.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 6B would have similar impacts on upland recreation activities as those described for Alternative 1B.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.13 Alternative 6C—Isolated Conveyance with West Canal and Intakes W1–W5

For the purposes of assessment of effects on recreation, Alternative 6C is the same as Alternative 1C, with the following exceptions.

- Alternative 6C utilizes isolated conveyance.
- Alternative 6C has a different operations scenario.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

The effects of water conveyance facility construction on existing recreational facilities would be the same as those described under Alternative 1C.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

The temporary disruption of recreational opportunities as a result of construction of conveyance facilities would be the same as those described under Alternative 1C, Impact REC-2.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Under this Alternative, recreational boat navigation would be affected to the same extent as under Alternative 1C.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects of facility maintenance activities on water-based recreation would be similar to those described under Alternative 1C.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects due to maintenance activities on land-based recreation under Alternative 6C would be the same as those described for Alternative 1C.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Measures

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 6C would be similar to those described for Alternative 1C.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 6C would be similar to those described for Alternative 1C.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of

implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 6C would have similar impacts on upland recreation activities as those described for Alternative 1C.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.14 Alternative 7—Dual Conveyance with Tunnel, Intakes 2, 3, and 5, and Enhanced Aquatic Conservation

For the purposes of assessment of effects on recreation, Alternative 7 is the same as Alternative 1A, with the following exceptions.

- Alternative 7 has three proposed intakes, rather than five—Intakes 2, 3, and 5.
- Alternative 7 has a different operations scenario.
- The restoration measures for Alternative 7 include an additional 20 miles of channel margin restoration and an additional 10,000 acres of seasonally inundated floodplain.

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Alternative 7 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only three intake locations (Intakes 2, 3, and 5) would be constructed under Alternative 7. Effects from Alternative 7 would therefore be anticipated to be less severe than those from Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects related to temporary disruption of recreational opportunities or experiences under Alternative 7 would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 7. While effects associated with Alternative 7 construction of physical components would be anticipated to be less severe than those under Alternative 1A, substantial disruption of recreation opportunities at the sites within the CPA would still occur. These would be considered adverse effects.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructingthe proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under this Alternative would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 7. While effects associated with this Alternative would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for three intake facilities under this Alternative.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Opportunities for land-based recreation would be affected by maintenance of conveyance facilities in the same manner described for Alternative 1A. However, under Alternative 7, only three intake facilities would be constructed.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Components

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 7 would be similar to those described for Alternative 1A; however, under this Alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally-

inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other action alternatives.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 7 would be similar to those described for Alternative 1A; however, under this Alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally-inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other action alternatives.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 7 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, 40 miles of channel margin habitat would be enhanced and 20,000 acres of seasonally-inundated floodplain would be restored, instead of 20 miles and 10,000 acres, respectively, under other action alternatives.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.15 Alternative 8—Dual Conveyance with Tunnel and Increased Delta Outflow

For the purposes of assessment of effects on recreation, Alternative 8 is the same as Alternative 1A, with the following exceptions.

- Alternative 8 has three proposed intakes, rather than five—Intakes 2, 3, and 5.
- Alternative 8 has a water operations scenario achieving up to 1.5 million acre-feet (MAF) of increased Delta outflow.
- Alternative 8 restoration acreage targets may vary from other action alternatives

Construction of Structural/Physical Components

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Alternative 8 would have similar effects on the displacement of existing recreational facilities as those described under Alternative 1A; however, only three intake locations (2, 3, and 5) would be constructed under Alternative 8. Effects from Alternative 8 would therefore be anticipated to be less severe than those from Alternative 1A.

CEQA Conclusion: The project will not result in the permanent displacement of any public use or private commercial recreation facility available for public access. Therefore, impacts are considered less than significant.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Effects related to temporary disruption of recreational opportunities or experiences under Alternative 8 would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 8. While effects associated with Alternative 8 construction of physical components would be anticipated to be less severe than those under Alternative 1A, substantial disruption of recreation opportunities at the sites within the CPA would still occur. These would be considered adverse effects.

CEQA Conclusion: Access to and availability of all the facilities within the CPA would be maintained. Nonetheless, construction of Alternative 1A intakes and water conveyance facilities would result in temporary impacts on recreational opportunities and experiences in the Delta Region as a result of noise, traffic, and other construction-related disruptions. These effects would be temporary, but could last up to 7 years. Environmental commitments for Navigation Protection and Noise Management would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Effects related to temporary conflicts with recreational opportunities or experiences under this Alternative would be similar to those described for Alternative 1A; however, only three intake locations would be constructed under Alternative 8. While effects associated with this Alternative

would therefore be anticipated to be less severe than those from Alternative 1A, substantial conflicts with navigation would remain from the temporary barge facilities.

CEQA Conclusion: Effects on boat passage and navigation in the Delta would result from the construction of the intakes and temporary barge facilities. Effects include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. However, boat passage volume and the prevalence of other water-based activities along the corridor of the Sacramento River where intakes are proposed are low. In addition, there is sufficient width in the channel to allow boat passage, with minor delays related to construction speed zones.

Construction of temporary barge facilities would result in significant effects to boat passage and navigation including the creation of obstructions to boat passage and associated boat traffic delays, temporary channel closures that could impede boat movement and eliminate recreational opportunities, and a reduced recreational experience due to construction noise. In waterways where water skiing, wakeboarding and tubing occur, recreation opportunities would be eliminated during the construction period. These significant effects would be reduced with the implementation of the Navigation Protection and Noise Management environmental commitments and Mitigation Measure REC-1, but not to a less-than-significant level. These effects are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

CEQA Conclusion: [*CEQA conclusions will be developed on completion of the fisheries impact analysis.*]

Operations and Maintenance

[*Note to Reviewers: Operation-related effects to water-based and water-enhanced recreation activities associated with changes in reservoir levels will be inserted when CALSIM data has been received, reviewed, and analyzed for the operational scenario adopted under this Alternative. In addition, operation-related effects on recreational fishing will be determined based on the effects described in the Fisheries section when completed.*]

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Effects related to changes to boat passage and navigation as a result of maintenance of intake facilities would be similar to those described for Alternative 1A; however, maintenance activities would only be necessary for three intake facilities under this Alternative.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or

water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Opportunities for land-based recreation would be affected by maintenance of conveyance facilities in the same manner described for Alternative 1A. However, under Alternative 8, only three intake facilities would be constructed.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to land-based recreational opportunities. Therefore, there is no impact.

Conservation Measures

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 8 would be similar to those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered.

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 8 would be similar to those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create excess noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 8 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, under this Alternative, target acreages for enhancement or restoration may be altered.

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

15.3.3.16 Alternative 9—Separate Corridors

Construction of Structural/Physical Components

Table 15-16 lists the recreation sites that fall within the construction right-of-way, within the CPA, or are within 1,000 feet of the CPA limits. Specific effects are discussed below. See Chapter 17, *Visual Resources*, and Chapter 23, *Noise*, for additional visual- and noise-related effects on recreationists, respectively.

Table 15-16. Recreation Sites Potentially Affected during Construction of Alternative 9

Sites in the Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
Boathouse Marina	Dagmar's Landing (Marina)	Cosumnes River Preserve
Walnut Grove Public Guest Dock	Deckhands Marine Supply (Marina)	Wimpy's Marina
Boon Dox Guest Dock	Landing 63 (Marina)	New Hope Landing Marina
Delta Meadows	Walnut Grove Marina	
Brannan Island State Recreation Area	Delta Meadows	
Sherman Island	Cosumnes River Preserve	
	Brannan Island State Recreation Area	
	Bullfrog Landing (Marina)	
	Union Point Resort (Restaurant with Guest Dock)	
	Clifton Court Forebay	
	Lazy M Marina	
	Rivers End Marina	
	Sherman Island	

Sites in the Right-of-Way	Sites in the CPA	Sites within 1,000 Feet of the CPA Limits
	Dagmar's Landing (Marina)	
	Deckhands Marine Supply (Marina)	
	Landing 63 (Marina)	

Source: Compiled by DHCCP in 2010.
Note: CPA = Conveyance Planning Area

Impact REC-1: Displacement of existing recreational facilities as a result of constructing the proposed water conveyance facility

Within the Alternative 9 right-of-way, there are several recreation facilities and designated use areas (Table 15-16). Recreational use in the vicinity of the fish screens, operable gates and boat passage facilities, and several of the waterways near the barge unloading facilities includes boating (motorized and nonmotorized) and other water recreation. Construction of Alternative 9 facilities would result in displacement and permanent loss of recreation facilities.

As shown in Table 15-16, one marina and two docks are in the Alternative 9 right-of way and would be displaced during construction of the fish screen and intakes at Delta Cross Channel and Georgiana Slough (Appendix ___). In addition, a cluster of houseboats is located at the junction of Old and Middle Rivers. These would be permanently displaced by construction.

Construction of the fish screens and intakes would result in permanent direct effects on recreation opportunities available at the Boathouse Marina and the Walnut Grove and Boon Dox guest docks. Operable barriers are proposed within Delta Meadows, Brannan Island State Recreation Area, and Sherman Island. Placement of conveyance features within these sites would not result in displacement of any existing facilities, but would result in temporary construction-related effects which are discussed below.

Boathouse Marina

Recreation opportunities at Boathouse Marina at Locke would be directly affected by the fish screen installed at the mouth of the Delta Cross Channel. The upstream most 650 feet of the 2,800-foot-long fish screen would occupy about 50 percent of the riverbank area now occupied by the marina. The marina provides 56 boat berths and indoor storage for 48 boats up to 23 feet long. In addition, necessary modification of the river levee in conjunction with the fish screen would require removal of the main marina building, a former packing shed that provides the indoor boat storage and houses the marina office and other marina services. Because installing the fish screen would require a portion of the marina berths and the primary marina structure to be removed, the marina could no longer operate in this location, and these berthing opportunities would be lost.

Walnut Grove Public Guest Dock

The Walnut Grove public guest dock, just upstream of the Walnut Grove Bridge, could also be affected by the fish screen planned for the mouth of the Delta Cross Channel. The downstream end of the fish screen would be immediately upstream of the guest dock. Addition of the fish screen to the waterway could make it more challenging for boats to navigate safely to and from the guest dock, and changes in river currents related to the fish screen could also affect boaters' use of the dock.

Together, these factors could make continued operation of the dock infeasible. Therefore, this guest docking opportunity could be lost, reducing boater's access to the goods and services provided in the Town of Walnut Grove.

Boon Dox Guest Dock

The Boon Dox guest dock, just downstream from the Walnut Grove public dock, on the other side of the Walnut Grove Bridge, would be affected by the fish screen planned for the mouth of Georgiana Slough. The upstream end of the fish screen would occupy the riverbank area now occupied by the guest dock, which is used by boating patrons of the Boon Dox convenience store and possibly by other boaters visiting Walnut Grove. Therefore, this guest docking opportunity would be lost, also reducing boater's access to the goods and services provided in the Town of Walnut Grove.

Construction of Alternative 9 fish screens and intakes would result in the direct permanent loss of institutionally recognized recreation facilities including Walnut Grove public guest dock, Boathouse Marina and the Boon Dox. These effects are considered adverse.

CEQA Conclusion: Construction of Alternative 9 fish screens and intakes would result in the direct permanent loss of institutionally recognized recreation facilities including Walnut Grove public guest dock, Boathouse Marina and the Boon Dox. These impacts are considered significant and unavoidable.

Impact REC-2: Temporary disruption of recreation opportunities and experiences as a result of constructing the proposed water conveyance facility

Adverse changes to recreation experiences occur when the quality of a particular recreation opportunity is reduced because of undesirable changes in the recreation setting, such as increased noise, dust, or artificial light; a loss of natural scenery or views; increased numbers of other recreationists, causing competition or crowding; reduced ability of recreationists to move about a waterway or recreation area; or reduced enjoyment. The loss of enjoyment may cause some recreationists to be displaced; that is, they would cease their recreation activities at these locations or pursue their recreation activities at a different time or location because of changes in natural, physical, or scenic conditions that they consider undesirable.

Construction of the fish screens, operable gates, siphons, and barge unloading facilities would degrade recreation experiences within affected waterways as a result of speed zone restrictions, possible boater congestion, construction noise, or changes to the visual setting.

Temporary construction zone restrictions would include speed limits that could cause minor delays in boat traffic and increased boat traffic congestion and thus detract from the boating experience within the waterways near the intake and barge unloading facility sites.

Construction noise could also affect the ambient recreation setting in the vicinity of construction activities and degrade the recreation experience of users of affected waterways. In addition, construction noise from construction work areas could affect the recreation setting and thus the recreation experience of boaters and anglers and others in these various locations.

Landing 63, Deckhands Marine Supply, and Dagmar's Landing are on the right bank of the Sacramento River in Walnut Grove near the proposed Georgiana Slough intake and fish screen. Construction activities would degrade the recreation experience for boaters using these marinas. These facilities would be directly adjacent to construction activities. Users of these facilities would

likely experience undesirable boat traffic delays, congestion, and construction noise effects that would contribute to their loss of enjoyment of boating in the affected area. Environmental commitments for Navigation Protection and Noise Management would lessen the adverse effects on recreation experience near construction areas. However, boaters may cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location.

The recreation experiences of boaters at each of the waterway locations where conveyance facilities would be located could be affected by construction of those facilities. Both land- and water-related construction activities would negatively affect the recreation setting for water-based activities because of the noise and visual presence of the construction. This may lead some boaters to avoid boating or fishing in the affected areas. However, boaters' presence in the vicinity of the construction sites would generally be of short duration, and boaters would have the opportunity to use other portions of the affected waterways or other Delta waterways where no construction activity was occurring.

Although the construction activities and equipment would be visible to boaters in proximity to the construction sites, the existing visual setting in the vicinity of most of the conveyance facilities already includes such human-made features as riprapped levee banks, electric transmission line towers, communication towers, railroads, and bridges.

Although Environmental commitments for Noise Management and Navigation Protection, along with implementation of Mitigation Measure REC-1would lessen the effects of boat traffic delays, congestion, and construction noise on the recreation experience, the local recreation experience may be diminished to the extent that some recreationists may cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location. The adverse effects of construction activities on recreation experience in the vicinity of the fish screen facilities would be temporary.

Alternative 9 would result in the temporary degradation of recreational land- and water-based experiences due to construction noise, boat traffic delays, and congestion. The local recreation experience may be diminished, and some recreationists may cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location because of construction activities. These effects would be reduced with the implementation of environmental commitments for Navigation Protection Noise Management and Mitigation Measure REC-1. However, due to the duration of the disruption, these effects would be considered adverse.

CEQA Conclusion: Alternative 9 would result in the temporary degradation of recreational land- and water-based experiences due to construction noise, boat traffic delays, and congestion. Although environmental commitments would be implemented to lessen the effects, the local recreation experience may be diminished, and some recreationists may cease their recreation activities on affected waterways or pursue their recreation activities at a different time or location because of construction activities. These effects are considered significant, but would be reduced with the implementation of Environmental commitments for Navigation Protection and Noise Management and Mitigation Measure REC-1. However, due to the duration of the disruption, these effects would be considered significant and unavoidable.

Impact REC-3: Temporary alteration of recreational boat navigation as a result of constructing the proposed water conveyance facility

Adverse changes to boat passage and navigation, including obstructions to boat passage and boat traffic delays, would occur during the construction of Alternative 9. Temporary channel closures may also be required that could impede boat movement. Construction of fish screens, operable gates, and boat passage facilities would include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment. Piers or temporary barge unloading facilities could also be located at the fish screens, gate sites, or spoil/dredged material disposal areas. Construction equipment, such as barges and dredges, could obstruct boat passage or cause congestion in high traffic areas, as could the placement of cofferdams or barge unloading facilities. Channel obstructions and potential congestion may pose navigational and safety hazards to boaters. Reduced boat speed limits could cause further boat traffic delays in the vicinity of the construction sites.

Conveyance Facilities – Operable Gates, Fish Screens, Dredging and Channel Modifications

Construction of Alternative 9 conveyance facilities would result in temporary obstruction of boat passage and may cause boat traffic delays or navigation hazards to boaters. Table 15-17 lists the waterways where impediments to boat passage and navigation would occur, the type of facility to be constructed or other conveyance measure, and the peak (summer weekend) boat traffic volume associated with each waterway location. Boat traffic volume is moderately high or high at most of these locations.

Operable Gates and Fish Screens

On the waterways where an operable gate is planned, boat passage and navigation would be adversely affected by restriction in the width of the channels open to boat passage and in-channel obstructions during construction. Construction activities would typically include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment that would obstruct portions of the channel. For culvert siphons and operable gate sites, construction, including the installation of cofferdams, would be phased, allowing for at least half of the waterway to remain open at any one time. In this way, use of the waterway for recreational navigation would be allowed to continue during construction.

Boats would be unable to use the portion of the waterway where construction was occurring and would be required to navigate around obstructions within the channel. Effects to boat passage and navigation as a result of construction would be temporary and reduced with implementation of Environmental Commitment Navigation Protection.

Table 15-17. Waterways Affected by Construction and Maintenance of Conveyance Facilities (Near-Term) and Peak Boat Traffic Volume on the Waterways

Waterway	Conveyance Facility/Measure	Peak Boat Traffic Volume[a]
Mokelumne River Fish Migration Pathway		
Mokelumne River at Lost Slough	Operable Gate	Low
Snodgrass Slough upstream of Delta Cross Channel	Operable Gate	High
Sacramento River at Locke	Connecting Channel to Meadow Slough with Operable Gate	High
Meadow Slough	Operable Gate and New Channel	–[b]
Water Supply Intakes		
Delta Cross Channel at Sacramento River	Fish Screen and Modifications to Existing Gate	High
Georgiana Slough at Sacramento River	Fish Screen and Operable Gate	Low
Fish Migration and Salinity Improvements		
Threemile Slough near Sacramento River	Operable Gate	High
South Delta Water Supply Corridor		
Connection Slough at Middle River	Operable Gate	Moderately High
Railroad Cut at Middle River	Operable Gate and Barge Unloading Facility	High
Woodward Canal at Middle River	Operable Gate and Barge Unloading Facility	High
Middle River, south of the Railroad Cut and Woodward Cut	Barge Unloading Facility	High
Middle River Upstream of Victoria Canal	Operable Gate	Low
Victoria Canal at Old River	Operable Gate	High
Middle River between Mildred River to Victoria Canal	Dredging	High
Victoria Canal/North Canal	Dredging	High
Old River near Coney Island	Siphon	High
West Canal	Siphon	High
Old River Fish Movement Corridor		
Fishermen's Cut at False River	Operable Gate and Barge Unloading Facility	Low
Old River at San Joaquin River (Head of Old River)	Operable Gate and Barge Unloading Facility	High
San Joaquin River at Old River	Operable Gate	Moderate
Old River at Delta-Mendota Canal	Modification of River Channel	Moderately High

Sources: AECOM 2009; California Department of Water Resources and Bureau of Reclamation 2005.

[a] Peak boat traffic volume occurs on summer weekends and holidays. The BDCP boat traffic study included boat traffic observation at most of these waterway locations. The boat traffic study report (Appendix 15A) provides additional details on boat traffic volume and other characteristics at nine of these waterways. Boat traffic volume for the other waterways is drawn from the South Delta Improvement Program and other past south Delta boat traffic observations, from other secondary sources, or extrapolated from nearby sites where 2010 boat traffic study data are available.

[b] Boat passage is not available at the westernmost point of Meadow Slough, where a new channel would be created; therefore, no boat traffic data are available.

Reduced boat speed limits would be required and would be posted in the vicinity of the construction sites. Some of the gate sites are within existing speed restriction zones because of the presence of marinas and private docks.[1] Reduced speeds in areas of moderately high- or high-volume boat traffic (primarily during summer weekends) could increase congestion on the water in those areas. However, the waterways in the vicinity of the gate construction sites would remain open to boat passage at most times, and any necessary channel closures would be short term (typically less than 1–2 days).

Boaters may be able to use alternative routes to reach their desired destinations and avoid traffic delays while passing through the construction zones. However, most detours would require traveling a considerably greater distance and may not be practical or desirable for many boaters. Because gates could be constructed in multiple locations simultaneously, alternative routes without construction activity may not be available between some destinations (e.g., between the Sacramento and Mokelumne rivers near Walnut Grove or between Old and Middle Rivers in the south Delta).

Effects on boat passage and navigation on the Sacramento River, near Locke and Walnut Grove, would be associated with construction of fish screens and intakes would be similar to the effects of operable gate construction. The navigation channel would be narrowed and boat speeds could be reduced in the vicinity of the fish screen and channel construction sites, but boat passage would remain open and available at most times.

The operable gate at Georgiana Slough would be built in conjunction with a fish screen across the mouth of the slough, with a boat lock. The fish screen would occupy a portion of the Sacramento River channel along the east bank of the river, restricting the width of the channel available for boat passage and potentially increasing congestion in this busy area. This could also have an adverse effect on boating recreation on this portion of the Sacramento River.

Siphons

Effects on boat passage and navigation during the construction of siphons on Old River and West Canal, on the east and west sides of Coney Island, would also be similar to the effects of operable gate construction.

Both Old River and West Canal are major south Delta boating routes with probable high traffic volume at peak-use times. In particular, boaters use these waterways to move between access points, such as Rivers End Marina, a few miles to the south, and popular waterskiing and wakeboarding channels, such as Victoria Canal/North Canal and Woodward Canal, to the north. These waterways are also used by waterskiers, wakeboarders, other pleasure boaters, and anglers.

Channel Modifications

Channel connections would occur in two areas on Meadow Slough, one portion would connect a navigable portion of the slough to a non-navigable isolated portion of the slough. From the westernmost point of the slough a new channel connection would be made to the Sacramento River as part of the fish corridor. There is currently no boat passage at this point on Meadow Slough, therefore, there would be no effect on boat passage and navigation related to construction at that location.

[1] State law restricts speed to 5 miles per hour when passing within 200 feet of any docks or boat mooring location.

Modification of the channel of Old River near the mouth of the Delta-Mendota Canal would involve filling in the existing channel between the Tracy Fish Facility and Fabian Tract, thereby eliminating access to and from the Rivers End Marina and connectivity between Old River and Delta-Mendota Canal. As part of Design Measure 15-3, Channel Modifications, a new channel would be designed and constructed between Old River and Rivers End Marina. This channel would maintain a connection between Old River and Delta-Mendota Canal and would allow for continued access to Rivers End Marina from Old River. Although the new channel would preserve the continuity of the Old River channel north and south of the Delta-Mendota Canal, boat passage likely would be disrupted periodically during construction. Boat traffic in this area would be expected to be moderately high at peak-use times because the Rivers End Marina launch ramp and several dozen boat docks associated with private homes and cabins are in the vicinity.

Construction of the new channel would require the use of construction equipment, such as barges and dredges, which could cause construction noise. Construction activities would also degrade or reduce fishing or wildlife viewing opportunities if wildlife avoids the area because of construction noise. The effects on fishing, hunting, or wildlife viewing opportunities in the vicinity of the construction from noise would be temporary, lasting up to 7 years.

Dredging Activities

Dredging activities are proposed on the Middle River between Empire Cut and Victoria Canal and in Victoria Canal/North Canal. Dredging in these waterways would require the establishment of safety zones around the dredge while it is in operation. The dredge and any associated barges or pipeline used for sediment disposal would be marked with signage and lights as required by U.S. Coast Guard regulations. Dredging on narrow reaches of the Middle River channel and on Victoria Canal/North Canal may require temporary closure of the channel in the vicinity of the dredge. A side channel that would not be dredged would be available alongside most portions of the reach of Middle River to be dredged, which would allow unimpeded boat passage. Similarly, the parallel channels of Victoria and North Canals, each about 200 feet wide, would allow continued boat passage at most times because the dredger would be used on only one side of the waterway at a time.

The dredging on Middle River and Victoria Canal/North Canal also would require the construction of barge unloading facilities at two locations on Middle River and one location on North Canal. The facilities would be used to transfer dredged material to spoil sites and would be removed after construction was completed. On Middle River, the barge unloading facilities would occupy about 850 feet of the west bank of the river, at a site about 0.5 mile north of Railroad Cut and a similar portion of the east bank of the river at a site about 1 mile south of Woodward Cut. At the site north of Railroad Cut, the river splits into two channels around a large, vegetated island, and the west channel is about 400–500 feet wide. Although the barge facility and operations would occupy part of the channel and would restrict boat passage, boat traffic could continue to use the west channel and could also use the east channel, which would be unobstructed and which is not subject to dredging. At the site south of Woodward Cut, the river also splits into two channels around a large, vegetated island, but the east channel is only about 200 feet wide. Therefore, the barge unloading facility and barge operations at this location could occupy a substantial portion of the east channel of the river, constricting or preventing boat passage in that channel. The 200- to 250-foot-wide west channel would be unaffected and would continue to permit unobstructed boat passage. However, peak boat traffic volume is high at this location. Because all or most boat traffic would be confined to the west channel by the barge unloading facility and barge operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

On North Canal, the barge unloading facility would occupy about 1,200 feet of the north bank of the canal, at a site about 1 mile west of Middle River. The canal is about 150–200 feet wide at this location. Therefore, the barge unloading facility and barge operations at this location could occupy a substantial portion of the canal, constricting or preventing boat passage. The parallel and similarly sized Victoria Canal would be unaffected by the barge unloading facility and would continue to permit unobstructed boat passage, although dredging activity would occur in both canals. Peak boat traffic volume is high at this location. Because all or most boat traffic would be confined to Victoria Canal by the barge unloading facility and barge operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends).

Temporary Barge Unloading Facilities

Temporary barge unloading facilities may be located adjacent to four of the operable gate construction sites: Fishermen's Cut at San Joaquin River, Old River at San Joaquin River, Railroad Cut at Middle River, and Woodward Cut at Middle River. The facilities would be used to transfer operable gate construction equipment and materials to and from the gate sites and would be removed after construction is completed. At the Fishermen's Cut and Old River gate sites, the barge unloading facilities would be built on the San Joaquin River and would occupy about 800 feet of the riverbank. In both of these locations, the San Joaquin River is about 0.5-mile wide. Therefore, the barge unloading facilities and the barges using them would temporarily occupy a relatively small portion at one side of the channel.

Similar barge unloading facilities would be built on Middle River, immediately south of the Railroad Cut and Woodward Cut gate construction sites. The facilities would be used to transfer operable gate construction equipment and materials to and from the gate site and to transfer dredged material to spoil sites. The facilities would be removed after construction is completed. These facilities would occupy about 1,100 feet and 900 feet, respectively, of the riverbank in those areas. The Middle River in both locations is about 600–650 feet wide and is characterized by a split channel, with a vegetated island in the middle of the river. The barge unloading facilities and barge operations at these two locations could occupy a substantial portion of the west channel of the river, constricting or preventing boat passage in that channel. At both locations the 150- to 200-foot-wide east channel would be unaffected and would continue to permit unobstructed boat passage. However, peak boat traffic volume is high at these locations. Because all or most boat traffic would be confined to the east channel by the barge facility and barge unloading operations, increased boat traffic congestion is likely to occur during peak use (primarily summer weekends) at these locations.

Adverse direct and indirect effects on boat passage and navigation would occur as a result of construction of the conveyance facility features. Boats would be unable to use the portion of the waterways where construction was occurring and would be required to navigate around obstructions within the channel. The effects would be reduced with the implementation of Environmental Commitment Navigation Protection and Mitigation Measure REC-1. Nonetheless, these effects would be adverse.

CEQA Conclusion: Significant impacts on boat passage and navigation would occur as a result of construction of the conveyance facility features of Alternative 9. In areas where construction is occurring, boats would be unable to use the portion of the waterways and be required to navigate around obstructions within the channel. Impacts would be reduced with implementation of Environmental Commitment Navigation Protection, which includes the installation of signage, warnings, and lighting, and speed restrictions to maintain boater safety near in-water construction

areas, but not to a less than significant level. Therefore, these impacts are considered significant and unavoidable.

Mitigation Measure REC-1: Provide waterway construction notification, prepare waterway traffic control plan, and prepare temporary channel closure plan

Impact REC-4: Temporary effects on recreational fishing as a result of constructing the proposed water conveyance facility

[*Note to Reviewers: A more detailed assessment of operation-related effects on recreational fishing will be conducted after completion of the fisheries impact assessment.*]

Fishing activity in the affected waterways is expected to vary by season, with higher use associated with the upstream Chinook salmon migration period and sturgeon and bass seasons. Fishing likely occurs in all of the waterways where intakes and barge unloading facilities would be located. Construction activities within the waterways affected by the intakes or barge unloading facilities would also degrade or reduce fishing opportunities in the vicinity of the intakes or barge unloading facilities if fish avoid the area because of construction activities in the water. The effects on fishing opportunities in the vicinity of the intakes and barge unloading facilities from construction would be temporary but last up to 7 years at each facility.

CEQA Conclusion: [*Note to Reviewers: The CEQA conclusions will be developed after completion of the fisheries impact assessment.*]

Impact REC-11: Temporary disruption of recreation facilities as a result of constructing the proposed water conveyance facility

Existing recreational facilities in the construction right-of-way

Three sites, Delta Meadows State Park, Brannan Island State Recreation Area, and Sherman Island would have temporary construction-related activities occurring within or directly adjacent to their boundaries causing temporary disruption to recreational opportunities and uses. Adverse effects may include restricted access to a recreation facility or use; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflict with construction activities that adversely affects the ability of visitors to participate in recreational activities at the site. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period.

Specific effects that have a potential to occur at each site are discussed further below.

Delta Meadows State Park

Components of Alternative 9 that are within or adjacent to Delta Meadows includes the fish screen at the Delta Cross Channel, operable barrier on Snodgrass slough, channel connections and improvements to Meadow Slough, and the construction of permanent access roads along the border of the park, and associated work areas and potential borrow and/or spoil areas. For construction fish screen at the Delta Cross Channel, an approximate18.5 acre temporary work areas is located at the southwest corner of the park property. This area of open fields appears to receive little recreation use. Construction of the new channel connection would require the use of construction equipment, such as barges and dredges, which could cause construction noise. Construction activities would also degrade or reduce non-motorized boating, fishing, or wildlife viewing

opportunities if wildlife avoids the area because of construction noise. Construction activity at the site of the new connection would also have adverse effects on boaters using the adjacent Meadow Slough, a popular mooring area for houseboaters and other boaters characterized by a relatively quiet, sheltered natural setting. Recreation opportunities at this site could also be affected by the use of the railroad levee road for temporary construction access during creation of the connecting channel between the navigable portion of Meadow Slough and an isolated portion of the slough to the southwest. This road is the primary access road into the park property and leads to a parking area and portable restroom. This road is a primary walkway for visitors to the park property engaged in wildlife viewing and other activities. It also provides access to Snodgrass Slough for bank anglers. These recreational activities would be adversely affected by construction traffic.

The levee road on the south edge of the park property would also be used for construction access. This use could disrupt the use of the levee road by recreationists for shore fishing activity, bird watching, wildlife viewing, and walking along the levee.

Brannan Island State Recreation Area

Construction of the operable gate on Threemile Slough would also result in direct effects on recreation opportunities and experiences available at Brannan Island State Recreation Area. A temporary construction access road is planned to be established at the south end of the State Recreation Area, generally following the route of an existing gravel gas well access road. A temporary work area covering about 5.3 acres in the same area of the State Recreation Area would be needed. The main entrance road to the State Recreation Area would not be used for construction traffic; therefore, recreation access to the State Recreation Area would not be affected.

The southernmost portion of the State Recreation Area in the vicinity of these construction activities is primarily undeveloped grassland with informal (user-developed) trails. Fishing activity may take place along the adjacent reach of Threemile Slough. The presence of construction traffic on the gravel road and presence of construction activities in the southern portion of the State Recreation Area would effectively close these areas to this informal trail use and shoreline fishing; however, the recreation use associated with these recreation activities occurs at low levels in this area, particularly on weekdays, when overall visitation to the State Recreation Area is low. Both activities would remain available on the extensive areas of the State Recreation Area and its Threemile Slough shoreline that would be unaffected by construction activity.

Both land- and water-related construction activities would negatively affect the recreation setting for land-based activities because of noise and visual presence of the construction, which in turn may lead visitors to avoid the informal trails in the southern portion of the State Recreation Area and campers to select campsites away from the construction area. However, weekday camping use in the State Recreation Area (and presumably informal trail use associated with the campground at the south end of the State Recreation Area) is generally low (California Department of Parks and Recreation 2008), and there are other informal and formal trails and more than 100 campsites available for use in other portions of the State Recreation Area. Because the nearest developed campsites are about 800 feet away from the construction site, and the undeveloped RV rally area is located about 500 feet away, both visual and noise effects on campers would be somewhat lessened.

Although the construction activities and equipment would be visible to State Recreation Area visitors using the primarily undeveloped south end of the park, the existing visual setting in the vicinity already includes electric transmission line towers (on both sides of Threemile Slough), and a communication tower with guy wires located close to the Threemile Slough Bridge. [*Note to*

reviewers: This section will be revised based on state park closure information and additional construction duration information.]

Sherman Island

Land-based construction activities would also occur on Sherman Island, and construction traffic would use East Sherman Island Levee Road. This traffic would be focused on the road entrance located just before Threemile Slough Bridge and on the first 500 feet of the road leading to the construction area. This road is also the main access to Outrigger Marina on Threemile Slough, about 1 mile beyond the construction site. Road access would be maintained throughout the construction period, allowing patrons of Outrigger Marina to reach the marina without delays from construction traffic or activities. In addition, adjacent landowners would still be able to access their private docks or the shoreline for recreation activities. Therefore, there would be no effect on recreation opportunities at Outrigger Marina or at private docks related to construction access to Sherman Island.

A temporary work area adjacent to the gate on Threemile Slough includes a portion of Sherman Island, which is included within the DFG-administered Delta Island Hunting Program, a late-season hunt for pheasants and waterfowl on State-owned lands on Twitchell and Sherman islands (California Department of Fish and Game 2009c). The 3.2-acre area on Sherman Island planned for construction is not used for recreation; therefore, temporary use of this land for construction of project facilities would not affect recreation. Construction noise and activities could affect hunting opportunities within the vicinity of the construction activities, depending on the timing of gate construction. If construction is occurring just before or during the hunt, recreation hunting near the gate construction could be degraded, depending on the volume of noise and its effect on waterfowl and pheasants.

Existing recreational facilities within the Conveyance Planning Area

In addition to these areas which would experience direct effects, as shown in Table 15-16, a total of 13 recreation sites are located in the Alternative 9 CPA. Adverse effects include access restrictions to a recreation facility or use or other conflict with construction activities that adversely affects the ability of visitors to participate in recreational activities at the site. If these effects were to occur, visitors may choose to visit different recreation areas or marinas duringthe construction period. Specific effects that have a potential to occur at each site within the CPA are discussed further below.

Cosumnes River Preserve

The CPA encompasses a portion of the Cosumnes River Preserve in the vicinity of the Mokelumne River and east of the McCormack-Williamson Tract (other portions of the preserve, including the McCormack-Williamson Tract, are also in the CPA but are not used for recreation).

Within the Cosumnes River Preserve, portions of the Cosumnes River Walk, a 3-mile nature trail, passes within the CPA boundary as well as adjacent areas. The southernmost portion of the trail passes within about one-third of a mile of the beginning of a construction access road planned for the south levee of the Mokelumne River. The construction access road extends west from that point on Franklin Boulevard to the operable gate site on the Mokelumne River at Lost Slough. Recreation use of the Cosumnes River Walk would not, therefore, be directly affected by the project; however, the recreation experience of trail users may be affected by construction traffic noise.

Dagmar's Landing, Deckhands Marine Supply, and Landing 63

The CPA in this area also includes three private commercial marinas; Dagmar's Landing, Deckhands Marine Supply, and Landing 63 are small marinas on the Sacramento River near Walnut Grove with a total of 12–30 berths. These marinas are on the right bank of the Sacramento River, opposite the proposed fish screen and intakes at Meadow Slough and the Delta Cross Channel. In-water work in the Sacramento River may require speed zones and access detours, however, on-water access and use of these marinas would be maintained throughout construction.

Walnut Grove Marina

The Walnut Grove Marina is a large facility on Snodgrass Slough near Walnut Grove with 180 berths that also offers RV campsites. On-water and vehicular access to the marina would be maintained, and use of the marina's boating facilities would not be affected by land-based construction activities. Boating, picnicking, and camping opportunities would still be available at the marina during construction; however, the recreation experience of marina users may be affected by construction activities.

The Middle River corridor encompasses Bullfrog Marina, which provides 43 berths and a small store near Railroad Cut, and Union Point Resort, a restaurant and bar with a guest dock near Victoria Canal/North Canal. In the south Delta, the CPA encompasses all of Clifton Court Forebay and two private commercial marinas. Lazy M Marina is on Italian Slough, west of Clifton Court Forebay, and offers 35 berths, dry boat storage, and a boat ramp. Rivers End Marina is situated on an inlet off Old River near the Tracy Fish Facility and provides aboat ramp, dry boat storage, and 13 RV campsites.

Temporary disruption of use of facilities in the CPA ranges from no effect on recreation amenities to effects relating to construction and noise, dust and degradation of the recreational setting. In the case of the sites discussed above, access to all facilities will be maintained. Environmental Commitment Navigation Protection and Noise Management, along with Mitigation Measure REC-1, will be implemented to reduce these effects. Because these effects would not be substantial and are construction activities would not directly occur within these facilities, effects at not considered adverse. [*Note: pending details on durations and specific requirements related to construction*]

Existing recreational facilities within 1,000 feet of the conveyance planning area boundaries

Three sites are within 1,000 feet of the CPA boundaries: Cosumnes River Preserve, Wimpy's Marina, and Hope Landing Marina. Wimpy's Marina is primarily a restaurant and bar with a guest dock for boaters. The facility also provides a launch ramp and fuel dock, but no long-term berthing. The adjacent New Hope Landing Marina is primarily an RV camping facility, providing 48 long-term RV spaces and 4 short-term spaces but also providing about 10 long-term berths for houseboats, a few berths for other watercraft, and a boat ramp. Both marinas are at the junction of the South Fork and North Fork of the Mokelumne River, south of Walnut Grove. Recreation use of the facilities would not, therefore, be directly affected by the project; however, construction activities would degrade or reduce fishing or wildlife viewing opportunities if wildlife avoids the area because of construction noise. The effects on fishing or wildlife viewing opportunities in the vicinity of the construction from noise would be temporary, lasting up to 7 years.

Construction of Alternative 9 would not result in direct effects to existing recreational facilities within 1,000 feet of the CPA boundaries. Indirect effects may occur as a result temporary degradation of fishing or wildlife viewing opportunities, but activities are a sufficient distance away that these effects would not be considered adverse.. Therefore, there are no adverse effects.

CEQA Conclusion: Delta Meadows State Park, Brannan Island State Recreation Area, and Sherman Island would all experience temporary disruption of recreational activities, including disruption of use of facilities or the need for facilities to be concurrently used by recreationists and construction personnel. Fishing and wildlife viewing will be disturbed by construction activities including noise, dust and general degradation of the recreational setting. Temporary disruption of use of facilities in the CPA ranges from no effect on recreation amenities to impacts relating to construction and noise, dust and degradation of the recreational setting. In the case of the sites discussed above, access to all facilities will be maintained. Construction of Alternative 9 would not result in direct effects to existing recreational facilities within 1,000 feet of the CPA boundaries. Indirect effects may occur as a result temporary degradation of fishing or wildlife viewing opportunities, but activities are a sufficient distance away that these effects would not be significant. Environmental commitments for Navigation Protection and Noise Management, in combination with Mitigation Measure REC-1,will be implemented to reduce these effects. Overall, however, these impacts would remain significant. Although the impacts would be temporary, lasting up to seven years, these effects are of sufficient disruption and duration as to be considered significant and unavoidable.

Operations and Maintenance

Impact REC-5: Changes to water-based recreation opportunities at north- and south-of-Delta reservoirs

CEQA Conclusion: [*CEQA conclusions will be developed after completion of CALSIM modeling analysis*]

Impact REC-6: Changes to water-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Intake maintenance activities, such as painting, cleaning, making repairs, conducting biofouling prevention, conducting corrosion prevention, and maintaining equipment, could have a minor effect on boat passage and in the waterways where operable barriers,intakes and fish screens are installed. Major repair efforts requiring barges and divers, as well as activities to remove debris and sediment, could cause a temporary impediment to boat movement and result in slowing of Sacramento River boat traffic in the immediate vicinity of the affected intake structure and reducing opportunities for waterskiing, wakeboarding and tubing in the immediate vicinity of the intake structures. However, boat passage and navigation on the river would still be possible around any barges or other maintenance equipment. In addition, the areas around the intakes are not commonly used for waterskiing, wakeboarding and tubing, and many miles of the Sacramento River would still be usable for these activities during periodic maintenance events.

Maintenance of intake facilities would result in temporary, but not substantial adverse effects on boat passage and water-based recreational activities. Any effects would be short-term and intermittent. Other facility maintenance activities would occur on land and would not affect boat passage and navigation. These effects are not considered adverse.

CEQA Conclusion: Effects resulting from the maintenance of intake facilities would be short-term and intermittent and would not result in any significant effects on boat passage, navigation, or water-based recreation within the vicinity of the intakes. Maintenance effects are considered less-than-significant. No mitigation is required.

Impact REC-7: Changes to land-based recreation opportunities as a result of maintenance of the proposed water conveyance facility

Maintenance activities for the conveyance facilities may include painting, landscaping, equipment replacement, and mechanical repairs would not affect recreation opportunities. Maintenance activities for these facilities would occur within the facility right-of-way, which does not include any recreation facilities or recreation use areas. In addition, there would be no public recreation use of the new facilities. Maintenance activities would not result in any significant noise that would affect nearby recreational opportunities. Therefore, there would be no effects on recreation opportunities as a result of maintenance of conveyance facilities.

CEQA Conclusion: Maintenance of conveyance facilities would not result in any changes to recreational opportunities. Therefore, there is no impact.

Conservation Measures

Impact REC-8: Changes to fishing opportunities as a result of implementing the proposed conservation components

With regards to fishing opportunities, effects of implementing the conservation components under Alternative 9 would be similar to those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities

CEQA Conclusion: CM2–CM17 would overall improve fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. During the implementation stage, these measures could result in impacts on fishing opportunities by temporarily or permanently limiting access to fishing sites and disturbing fish habitat. In the long term, the impact on fishing opportunities is considered beneficial because the conservation measures are expected to enhance aquatic habitat and fish abundance.

Impact REC-9: Changes to boating-related recreation opportunities as a result of implementing the proposed conservation components

Effects on boating-related recreation activities stemming from implementation of the conservation components under Alternative 9 would be similar to those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities.

CEQA Conclusion: Channel modification and other activities associated with the implementation of some habitat restoration and enhancement measures would limit some opportunities for boating and boating-related recreation by reducing the extent of navigable water available to boaters. Temporary effects would also stem from the construction of areas, which may limit boat access, speeds, or create noise, odors, or unattractive visual scenes during periods of implementation. However, BDCP conservation measures would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Because these measures would not be anticipated to result in a substantial long-term disruption of boating activities, this impact is not considered significant.

Impact REC-10: Changes to upland recreational opportunities as a result of implementing the proposed conservation components

Implementing the conservation components under Alternative 9 would have similar impacts on upland recreation activities as those described for Alternative 1A; however, locations or target acreages may vary for proposed conservation activities

CEQA Conclusion: Site preparation and earthwork activities associated with a number of conservation measures would temporarily limit opportunities for upland recreational activities where they occur in or near existing recreational areas. Noise, odors, and visual effects of construction activities would also temporarily compromise the quality of upland recreation in and around these areas. Additionally, it is possible that current areas of upland recreation would be converted to wetland or other landforms poorly suited to hiking, nature photography, or other activities. However, near-term implementation would also restore or enhance new potential sites for upland recreation and the measure would improve the quality of existing recreational opportunities adjacent to areas modified by the conservation measures. These measures would not be anticipated to result in a substantial long-term disruption of upland recreational activities; thus, this impact is not considered significant.

Impact REC-12: Permanent alteration of recreational boat navigation as a result of operating the water conveyance facility

With operation of Alternative 9, boat passage and navigation would be affected to varying degrees at each of the 14 waterway locations where an operable gate is planned. Environmental commitment Boat Passage Facilities provides boat passage facilities at 10 of the 14 operable gate sites to allow for continued waterway passage while gates are closed. Table 15-18 lists the affected waterways associated with each type of conveyance facility and the peak boat traffic volume at each site.

Boat passage would be prohibited at three waterway locations where a fish screen or an operable gate without a boat passage facility would be constructed and no boat passage would be provided. Boat passage would be unimpeded at the two locations where siphons are planned to cross beneath the waterway.

Boat navigation could be enhanced by dredging on the two waterways where dredging and realignment of Old River are planned.

Table 15-18. Waterways Affected by Construction and Maintenance of Alternative 9 Conveyance Facilities (Early Long-Term 2025) and Peak Boat Traffic Volume

Type of Conveyance Facility and Waterway Location	Peak Boat Traffic Volume[a]
Operable Gate with Boat Passage Facility	
Mokelumne River downstream of Lost Slough	Low
Snodgrass Slough upstream of Delta Cross Channel	High
Georgiana Slough at Sacramento River	Low
Connection Slough at Middle River	Moderately High
Railroad Cut at Middle River	High
Woodward Canal at Middle River	Moderately High
Fishermen's Cut at San Joaquin River	Low
Old River at San Joaquin River	High
Meadow Slough	High
Victoria Canal at Old River	High
Operable Gate without Boat Passage Facility – Boat Passage When Gate Open	
Threemile Slough near Sacramento River	High
Fish Screen and Operable Gates without Boat Passage	
Delta Cross Channel at Sacramento River (Fish Screen)	High
San Joaquin River downstream of Old River	Moderate
Middle River upstream of Victoria Canal	Low
Dredging/Channel Reconfiguration	
Middle River between Empire Cut and Victoria Canal (Dredging)	High
Victoria Canal/North Canal (Dredging)	High
Old River at Delta-Mendota Canal (Reconfigured Channel)	Moderately High

Sources: AECOM 2009; California Department of Recreation and Bureau of Reclamation 2005.

[a] Peak boat traffic volume occurs on summer weekends and holidays. The BDCP Boat Traffic Study (Appendix 15A) provides additional details on boat traffic volume and other characteristics at nine of these waterways. Boat traffic volume for the other waterways is drawn from South Delta Improvement Program and other past south Delta boat traffic observations, from other secondary sources, or extrapolated from nearby sites where 2010 boat traffic study data are available.

[b] Also includes a fish barrier across the mouth of the slough, with boat passage.

[c] Meadow Slough would be affected by new connections created between the navigable portion of the slough and the Sacramento River, with an operable gate passable by boats when open at the new channel to the river.

Operable Gates with Boat Passage Facilities

At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway but would instead be required to stop at the gate and wait to be directed through the boat passage facility. [*Note: insert additional detail when dimensions of facilities are available*]. Wait times could be greater than 30 minutes at locations where boat traffic volume is moderately high or high, particularly during peak-use times. For example, summer weekend and holiday boat traffic at the Old River gate site was in the range of 250–400 boats per day and at the Snodgrass Slough and Railroad Cut gate sites was in the range of 150–300 boats per day. Summer weekend afternoon boat traffic at these sites was as high as 50–80 boats per hour. If estimated increases in boat traffic between 2010 and 2020 (Plater and Wade 2002) occur and continue beyond 2020 into the early long-term period, wait times at planned boat passage facilities could be longer than 30 minutes.

The rate at which boats could be passed through the passage facility would depend in part on the capacity of the passage facility chamber and other design factors. The skill of boat drivers at negotiating the passage facilities and the diversity of boat types and sizes using the facilities would also be factors in determining traffic flow and thus length of delays. Some of the high-traffic sites also host a wide variety of boat types, with numerous large boats. Wait times would be expected to be short at locations where boat traffic volume is low (typically 50–80 boats per day on weekends). At gate locations where boaters would be delayed longer than 30 minutes, there would be an adverse effect on boating recreation.

A new connection for boaters would be created with the construction of a channel and boat passage facility between the navigable portion of Meadow Slough and the Sacramento River. When the Delta Cross Channel gate is closed, the expectation would be that most of the traffic that now uses the Delta Cross Channel would be transferred to this location. This new connection may become the preferred route between the Sacramento River and Meadow Slough, Snodgrass Slough, and the Mokelumne River when the Delta Cross Channel is closed.

Operable Gates without Boat Passage Facilities

At Threemile Slough, an operable gate would be installed without a boat passage facility but where boats would be able to pass the gate when it was open. The gate would operate tidally which means that the gate would be closed on the incoming or outgoing tides, depending on the operational objective (fish migration control or salinity control) taking precedence at the time. In either mode of operation, the gate would be closed for several hours twice per day, prohibiting boat passage.

A boat traffic study conducted on Threemile Slough in 2008 (AECOM 2009) indicates that 300 or more boats per day pass through Threemile Slough on late spring and summer weekends, and more than 500 boats may use the slough on holidays. No other practical route exists between this reach of the Sacramento River and the San Joaquin River. If Threemile Slough were closed to boat passage, boaters wanting to travel between the Sacramento River and the San Joaquin River would be required to make a detour of 20 miles to the west around Sherman Island.

Many of the boats using Threemile Slough are launched from the Brannan Island State Recreation Area boat launch, 1 mile east of the planned gate site, and about half of those boats travel to the Sacramento River (AECOM 2009). In addition, Outrigger Marina, on the opposite bank of Threemile Slough from the State Recreation Area, draws a portion of its restaurant and fuel dock patrons from

the Sacramento River, and the Sacramento River is a destination for many of the boats berthed at the marina. When the gate is closed, boaters would be unable to travel to or from these locations and the Sacramento River.

Threemile Slough on the Sacramento River side of the gate does not provide space sufficient for a large number of boats to wait for the gate to open, and the Sacramento River in this area has strong winds and currents, making it an unsuitable place for most boats to moor. For these reasons, this change in boat navigation would have an adverse effect on boating recreation.

Operable Gates without Boat Passage Facility and No Boat Passage

The fish screen and modified gate without boat passage at the Delta Cross Channel would eliminate boat access between the Delta Cross Channel and the Sacramento River because modifications would lack provisions for boat passage. In combination with the closure of the gate at the new connecting channel between the Sacramento River and Meadow Slough, 0.75 mile upstream, this gate would eliminate the ability for most boaters to travel between this reach of the Sacramento River and Snodgrass Slough, Meadow Slough, or the Mokelumne River.

Studies to date have shown that as many as 300 boats per day use the Delta Cross Channel on summer weekends and holidays to travel between the Sacramento River and Snodgrass Slough (Snodgrass Slough is the route to Meadow Slough and the Mokelumne River). In addition, the fish screen would occupy a portion of the Sacramento River channel along the east bank of the river, restricting the width of the channel available for boat passage and potentially increasing congestion in this area. For these reasons, this change in boat navigation would have an adverse effect on boating recreation.

Because the Delta Cross Channel would no longer provide boat passage with implementation of this alternative, the new Meadow Slough channel would become the preferred route between the Sacramento River and Meadow Slough, Snodgrass Slough, and the Mokelumne River. The expectation would be that most of the traffic that now uses the Delta Cross Channel would be transferred to this location.

San Joaquin River at Old River

The operable gate planned for the San Joaquin River north of the head of Old River would prevent boaters who launch at downstream locations on the San Joaquin River from traveling on the San Joaquin River beyond Old River or into Old River because no boat passage would be provided. Dos Reis Park launch ramp is 2.5 miles downstream, and the Haven Acres Resort boat ramp and guest dock are 4 miles downstream. The nearest marinas and boat ramps in the Stockton area are more than 13 miles downstream.

The gate would prevent boaters navigating from upstream areas of the San Joaquin River or from Old River from moving downstream beyond the gate. The Mossdale Crossing Park boat ramp and the Mossdale Marina guest dock are located about 2.5 miles upstream on the San Joaquin River.

Boat traffic volume at this location appears to average about 100 boats per day during weekends and holidays based on surveys conducted by DWR in the 1990s (California Department of Water Resources and Bureau of Reclamation 2005). However, given the relatively few ramps, marinas, or other boating facilities in the vicinity and the availability of many unimpeded miles of the San Joaquin River and Old River available to boaters on either side of this gate, this change in boat navigation would have a minor adverse effect on boating recreation.

Middle River Upstream of Victoria Canal

The operable gate planned for Middle River just upstream of Victoria Canal would primarily prevent boaters navigating from downstream on Middle River and waterways connecting Middle and Old Rivers from traveling farther upstream because no boat passage would be provided. The only boating facility in the vicinity is the Union Point Resort, about 0.5 mile downstream, which has a restaurant and bar with guest dock but no boat berthing. Boat traffic volume at this location is light, with fewer than 20 boats per day observed during surveys conducted by DWR in the 1990s (California Department of Water Resources and Bureau of Reclamation 2005). For socioeconomic effects, refer to Chapter 16.

A few miles upstream of the gate site, the waterway becomes increasingly narrow and shallow, which limits use to small fishing boats and nonmotorized boats (e.g., canoes and kayaks). Boaters may access this reach of Middle River from upstream by launching at a county park ramp on the San Joaquin River. In addition, since 1987, DWR has installed a temporary rock barrier at this location from May through September of each year. No boat passage is provided at the rock barrier. Therefore, boat passage is blocked each year throughout the primary summer boating season, as well as during part of the spring and fall seasons. Because of the low level of boating activity on this reach of Middle River, the availability of public launch sites upstream, and the seasonal nature of the effect, this effect would be minor.

Dredging and Channel Reconfiguration

Dredging is planned for Middle River between Empire Cut and Victoria Canal, a distance of about 7 miles. Studies to date of Railroad Cut at Middle River and on Victoria Canal/North Canal (immediately south of the dredging area, and the probable source or destination for much of the Middle River boat traffic in this area) indicate that weekend and holiday boat traffic volume on this reach of Middle River is high. Although the dredging is not intended to widen the channel, the deepening of the channel would eliminate shallow areas and reduce areas where aquatic vegetation could become established. This would have a beneficial effect on boat navigation.

Dredging is also planned for the length of Victoria Canal/North Canal, terminating at the operable gate at the west end of the canals. The dredging would eliminate the narrow, vegetated berm that separates the two canals for much of their lengths. Boaters may consider the berm separating the two canals to be desirable because it provides a separation for the boat traffic on the two canals and facilitates the normal traffic pattern whereby eastbound traffic uses North Canal and westbound traffic uses Victoria Canal. The berm also serves to reduce boat wakes from traffic on the adjacent canal, which improves waterskiing conditions. However, the widening and deepening of the waterway could have a beneficial effect on boat navigation by creating a less restrictive channel and discouraging aquatic vegetation growth. Overall, loss of the central berm from the dredging would have a minor adverse effect on boating recreation.

Reconfiguration of the Old River channel at the mouth of the Delta-Mendota Canal inlet is planned to close off the inlet from Old River (the inlet would receive water from Clifton Court Forebay via a new canal). The inlet would be blocked by fill between the Tracy Fish Facility and Fabian Tract and between Fabian Tract and the tract south of Clifton Court Forebay. A new Old River channel would be cut across the tip of Fabian Tract.

This new channel would allow boaters to continue to pass between the Rivers End Marina and numerous cabins and docks near the marina and Old River to the north of Fabian Tract. Two small

islands with several cabins and boat docks located in the area to be filled would be eliminated by the channel reconfiguration, and a wider channel between the Rivers End Marina inlet and Old River would be created. The effect on boat recreation would be beneficial.

Changes in Flow Velocity during Gate Operations

[*Note to Reviewers: This evaluation will be completed when modeling data is completed and available.*]

Effects from the operation of operable gates would result in a substantial change and reduction of use of institutionally recognized recreational activities. At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway. At locations where an operable barrier is proposed without boat passage, boaters would lose access to waterways typically traveled. These effects would be reduced with the implementation of Mitigation Measure REC-2 and Mitigation Measure REC-3. However, because of the loss of boat passage and navigation and the delays associated with operable gates, these effects are considered adverse.

CEQA Conclusion: Impacts from the operation of operable gates would result in a substantial change and reduction of use of institutionally recognized recreational activities. At the 10 waterway locations where an operable gate with a boat passage facility is planned, boaters would no longer have unimpeded passage through the waterway. At locations where an operable barrier is proposed without boat passage, boaters would lose access to waterways typically traveled. These effects would be reduced with the implementation of Mitigation Measure REC-2 and Mitigation Measure REC-3, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

Mitigation Measure REC-2: Minimize congestion at passage facilities

To reduce the effects on boater's recreation experiences and to facilitate boat passage at the gate locations, the following will be implemented at the time of gate construction.

- Boat passage facilities will be designed to accommodate the average peak number of boaters and the range of boat types that use the affected waterway and minimize wait times to less than 30 minutes.
- To provide for a safe and convenient place to wait for the gate to open, floating docks, each 200 feet long and 12 feet wide, will be provided along the shoreline on each side of the boat passage facility to provide boaters a location to wait and use the facility. Mooring bits will be provided on the docks. Boaters may also choose to wait in the channel on either side of the gate.

Implementing this measure would reduce the effect on boaters' recreation experiences of gates without boat passage facilities when the gates are closed and the effect of the eight gates with boat passage facilities where high-volume boat traffic may cause wait times to exceed 30 minutes.

Mitigation Measure REC-3: Implement boat passage facility information and education program

Before and during project operation, a boater information program will be implemented to provide education on procedures for waiting and using the boat passage facilities. This program

will use a variety of printed media (e.g., posters, brochures) to provide the necessary information, and the media will be displayed and distributed at publicly accessible boat access facilities, including public and commercial boat ramps and marinas in the Delta Region. The information will also be provided for dissemination on the websites of public recreation and boater safety organizations and agencies (e.g., DPR, CDBW, DFG, U.S. Coast Guard, marine patrol agencies). Additional means of dissemination, such as distribution of materials or presentations at public meetings and events hosted or participated in by these organizations and agencies, will be used when the opportunity arises.

Implementing this measure would reduce the effect of the eight gates with boat passage facilities on boaters' recreation experiences.

Impact REC-13: Changes to other recreation opportunities as a result of the operation of the water conveyance facility

Permanent speed zone restrictions in the vicinity of operable gate and boat passage facilities would include speed limits that could adversely affect high-speed recreation opportunities, such as waterskiing, wakeboarding, and tubing, to the point they would be effectively eliminated. Table 15-19 presents the waterways where recreation would be affected. Railroad Cut, Woodward Cut, and Victoria Canal are popular wakeboarding and waterskiing destinations.

Table 15-19. Waterways Where Recreation Would Be Affected by Operation and Maintenance of Alternative 5 Conveyance Facilities (Early Long-Term)

Type of Conveyance Facility and Waterway	Primary Boating Activity
Operable Gate with Boat Passage Facility	
Railroad Cut at Middle River	Waterskiing and Wakeboarding
Woodward Canal at Middle River	Waterskiing and Wakeboarding
Operable Gate without Boat Passage Facility – Boat Passage When Gate Open	
Meadow Slough	Mooring
Threemile Slough near Sacramento River	Cruising (Pass-through Traffic)
Fish Screen and Operable Gates without Boat Passage	
Victoria Canal at Old River	Waterskiing and Wakeboarding

Sources: AECOM 2009; California Department of Boating and Waterways 2003.

At Brannan Island State Recreation Area, the gate on Threemile Slough and associated structures and access roadway would require construction to occur on State Recreation Area lands located along the Threemile Slough waterway. The location of the operable gate at Threemile Slough is in a primarily undeveloped portion of the State Recreation Area where recreational use is low. In addition, only a small percentage of the approximately 1-mile-long State Recreation Area shoreline on Threemile Slough would be affected. The portion of shoreline affected is the most distant from developed campsites, where most informal use in the undeveloped area is likely to originate.

Other than levee improvements, there would be no permanent changes to the lands on the Sherman Island side of the planned gate structure. No recreational activity is known to occur in that area. Road access via East Sherman Island Levee Road to Outrigger Marina would be restored via the existing levee road following completion of levee work. For these reasons, the potential effect of

Alternative 9 on recreation opportunities at Brannan Island State Recreation Area or the Sherman Island side of Threemile Slough would be minimal.

A new connection for boaters would be created with the construction of a channel and boat passage facility between the navigable portion of the Meadow Slough and the Sacramento River. This connection would provide for new boating opportunities within Delta Meadows; however, the introduction of a potential increase in motor boating activities within Delta Meadows may degrade the recreation opportunities and experience for mooring.

[*Note: this effect discussion will be expanded when modeling data is completed and reviewed.*]

Operation of the operable gates would result in permanent changes to recreation opportunities including recreational boating activities such as waterskiing and wakeboarding. Mitigation measure Mitigation Measure REC-1 would reduce these effects, but they are still considered adverse.

CEQA Conclusion: Operation of the operable gates would result in permanent changes to recreation opportunities including recreational boating activities such as waterskiing and wakeboarding. These effects are significant and no mitigation is available to reduce them. Mitigation Measure REC-1would reduce these effects, but not to a less than significant level. Therefore, these effects are considered significant and unavoidable.

15.3.3.17 Cumulative Analysis

[*Note to reviewers: this section is still being developed*]

Recreation opportunities in the three regions of the BDCP are expected to change as a result of past, present, and reasonably foreseeable future projects, related to population growth and changes in economic activity in the three regions(Chapter 30, *Growth Inducement*).

When the effects of the BDCP on recreation are considered in connection with the potential effects of projects listed in, Table X-3, Ongoing Programs, Projects, and Policies included in the Cumulative Impact Assessment for the BDCP EIR/EIS, the potential effects range from beneficial to potentially significant adverse cumulative effects on recreation.

Alternatives 1A through 9—Construction of Physical Components

For Alternatives 1A through 9, the construction of physical components of BDCP CM1 result in significant to significant and unavoidable effects on recreation involving the displacement and/or substantial long-term disruption or reduction of use of institutionally recognized recreational activities, both land- and water-based. These effects result from the following conditions.

- Direct displacement of facilities such as marinas.
- Construction-related noise and activities that would disrupt or degrade the recreation experience for users.
- Changes to recreation because of the placement of temporary in-water facilities such as cofferdams and barges that result in channel constriction or closure, speed restrictions, and other navigational safety measures that may cause delay or disruption.

For Alternatives 1A through 9, the construction of restored habitats associated with CM2–CM17 could also result in similar construction-related significant effects depending on the location and duration of the construction activities.

Other projects that may include construction activities with similar effects on land- and water-based recreation activities include the Fish Screen Project at Sherman and Twitchell Islands;North Delta Flood Control and Ecosystem Restoration Project; Dutch Slough Tidal Marsh Restoration Project; Delta Smelt Permanent Facility; San Joaquin River Restoration Program; Suisun Marsh Habitat Management, Preservation and Restoration Plan; Meins Landing Restoration; Cache Slough Restoration; North Bay Aqueduct Alternative Intake Project; Franks Tract Project; In-Delta Storage; CALFED Levee System Integrity Program; Delta Wetlands and Delta Islands; and Levees Feasibility Study. It is assumed that similar environmental commitments and mitigation measures to reduce effects would also be implemented for these projects. However, these effects, in combination with the BDCP could result in significant adverse cumulative effects.

Alternatives 1A through 9—Operation and Maintenance

Operation of Alternatives 1A through 8 results in changes to water-based recreational activities in north and south of Delta lakes or reservoirs that are less than significant based on CALSIM modeling results. Maintenance activities associated with the fish screens, gates and other physical structures resulted in less-than-significant impacts on recreation. [*Note to reviewer: Potential changes to recreational fishing (i.e., abundance) related to operations will be included upon completion of fisheries analysis and a cumulative conclusion will be added here*].

For Alternative 9, significant and unavoidable effects resulting from the operation of BDCP CM1 include the operation of boat passage facilities at operable gates. Placement of these operable gates in waterways results in long-term significant delays and/or elimination of use of waterways such as Threemile Slough during certain time periods. It is not known whether or not other projects in the Delta Region may propose permanent in-water facilities that would have similar effects. However, any additional effects to boat passage in combination with the BDCP effects would result in significantly adverse cumulative effects.

Alternatives 1A through 9—Long-Term Implementation of Conservation Measures 2 through 17

Long-term implementation of BDCP CM2–CM17 would result in beneficial effects on land- and water-based recreation activities such as fishing, boating, upland hunting, hiking, and wildlife viewing. CM2–CM17 include measures that would result in overall improvements to fishing opportunities by enhancing fish habitat in the Yolo Bypass; restoring tidal habitat, seasonally inundated floodplains, channel margins, and riparian habitat; control of aquatic vegetation and predators; and controlling illegal harvest of covered species. Channel modifications would also expand the geographic or temporal extent of navigable water in various locations throughout the Delta Region, leading to an enhanced boating experience. Areas currently used for land-based recreation activities may be converted to wetlands but BDCP conservation measures would also restore or enhance new sites for potential upland recreation, resulting in an overall improvement of the quality of existing land-based recreational opportunities.

A number of programs, plans, or projects may contribute to cumulative changes in land- and water-based recreational opportunities and experiences. These include: Recreation Proposal for the Sacramento–San Joaquin Delta and Suisun Marsh; Fish Screen Project at Sherman and Twitchell Islands; North Delta Flood Control and Ecosystem Restoration Project; Dutch Slough Tidal Marsh Restoration Project; Delta Smelt Permanent Facility; San Joaquin River Restoration Program; Lower American River Flow Management Standard; Suisun Marsh Habitat Management, Preservation and Restoration Plan; Cache Slough Restoration; North Bay Aqueduct Alternative Intake Project; Franks Tract Project; In-Delta Storage; CALFED Levee System Integrity Program; Delta Wetlands and Delta

Islands; and Levees Feasibility Study. Overall, these projects may also result in beneficial effects to land- and water-based activities as well as abundance of fish and other wildlife species that support or provide the basis for a variety of recreational activities.

15.4 References [use all references from HDR version]

[*Development of references in progress.*]

California Department of Water Resources. 2008.

ESA. 2010. *Perris Dam Remediation Program Draft Environmental Impact Report.* January. Los Angeles, CA. Prepared for Department of Water Resources.